Volume 89 Number 11

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

AMERICA'S passion for conventions survives even depression. . . . Six groups of four national technical societies are preparing to participate in the Thirteenth National Metal congress to be held (Page 109) at Boston, Sept. 21-25. . . . At the Metal exposition (Page 139) accompanying the congress more than 140 manufacturers of equipment used in the steel, metallurgical and welding fields will exhibit. . . . September also sees the Steel Founders' society meeting at Chicago, and the Concrete Reinforcing Steel institute convening at Shawnee-on-Delaware, with October already scheduling the Gray Iron institute at West Baden and the American Gas association at Atlantic City.

Market on Education Is Bullish

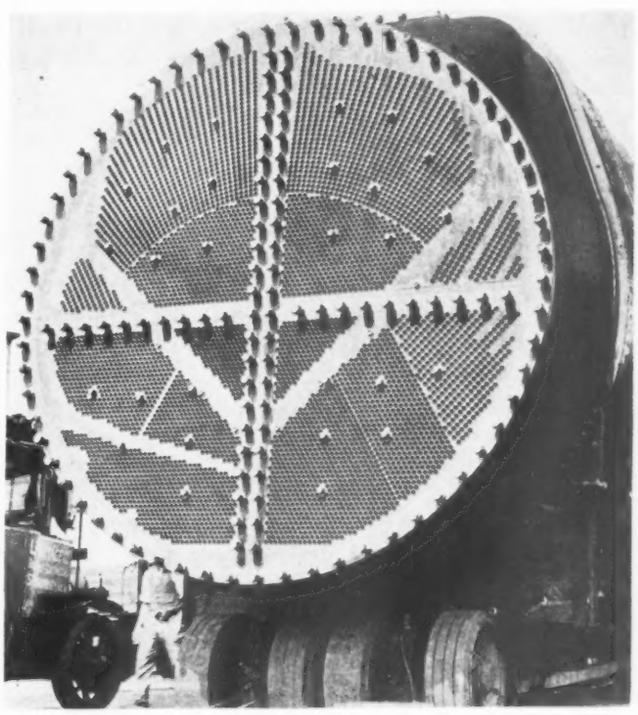
Nor can depression quench the thirst for technical information. . . . At the Metal congress in Boston, 56 papers, or 44 per cent more than at the 1930 congress, will be presented. Before the iron and steel division of the American Institute of Mining and Metallurgical Engineers (Page 130) there will be 21 papers for discussion; before the American Welding Society sessions (Page 128) 17 papers. . . . Meanwhile, the Reinforcing Bar institute, appraising the present as an opportune time for spreading its gospel, is arranging (Page 44) for the delivery of lectures in various cities by its technical staff.

Hope Springs Eternal—in Mills

Neither to labor nor to capital was Labor Day significant this year. . . . That steelmaking operations (Page 82) should be pulled below 30 per cent by the holiday occasions no surprise, but there is mild disappointment that mills have resumed with order books so lean. Only in pig iron (Page 90) is there actual improvement in demand. Nevertheless, the logic of events is that orders will expand mildly as September wears on. . . . It is a mark of encouragement that prices appear so stable as to excite little interest (Page 75) in fourth quarter levels. . . . In Germany, however, a general reduction in prices impends (Page 102) with the probability that whatever advantage buyers gain will be wrested from labor.

Labor Holds to Luxury of Strikes

For labor, the holiday brought no surcease from the increasing conviction that a lowering of wage rates is inescapable. Following last week's declaration by the president of the American Federation of Labor that he would assist all organized objectors to such a procedure,



Acme Photo

Trucking through London what is said to be the largest steam condenser ever built in England. It is 20 feet in diameter, weighs 30 tons

Wide World Photo

Workmen of the Phoenix Bridge Co. recently laid 1016 tons of structurals in 8 hours in bridging the Baltimore & Ohio railroad tracks in Philadelphia. This is claimed to be a record

the department of labor states (Page 26) that industrial disputes display a rising tendency, that in the first half of 1931 labor sacrificed $10,000,000 in wages for a principle. . . . To assist in co-ordinating unemployment relief, the President has conscripted (Page 26) Owen D. Young, chairman of General Electric.

North Fears South's Low Costs

Northern producers of steel may war among themselves concerning the merits of a flat percentage increase in freight rates, but against the South's proposal for a differential between interterritorial and intra-territorial rates they make common cause (Page 25). . . . Lacking the revenue a rate advance would create, the railroads are curtailing (Page 90) their expenditures, chiefly for labor, $5,000,000 each working day. . . . This retrenchment, affecting steel among other things, is one reason why ingot production, instead of making the usual upturn in August, declined 8.3 per cent (Page 27) to 66,133 tons per day.

When Steel and Nickel Amalgamate

Lacking steel, man could not burrow through the rock underlying New York and project his subways, nor, without steel, could be operate them. For automatic turnstiles (Page 32), which yield a quarter turn under the influence of a nickel, on a newly-opened line in Manhattan 140 tons of steel were required. Into an emergency ventilating system, for this subway went 225 tons of sheets and 35,000 feet of pipe. . . . But aboveground in New York, steel faces stiff competition. While steel is the heart of the new Cities Service building, its exterior has gone aluminum (Page 32), window frames and exterior trim being of this light metal. To insure the unbroken lines emphasizing the tower effect, exterior trim in New York (Page 33) is being welded.

Alien Wire in Mail Order Catalogs

More Belgian wire netting and barbed wire will be strung on western farms, the second direct cargo within a month having arrived at Chicago (Page 87) for the large mail order houses. . . . Imports to the contrary, the ratio of output of wire products to all finished steel production in the United States has remained constant for the past five years at about 7 per cent (Page 39), due in large measure to the development of new uses. . . . An authority on wire making estimates (Page 53) that 70 per cent of the cost of converting wire rods into wire is labor, practically all of it being charged to handling.

Set Robots To Controlling Heat

To hold or to dissipate, heat is a problem. . . . With an automatic proportioning device (Page 46), maintenance of the proper forging temperature of blanks for bolts, nuts and rivets is removed from the realm of judgment, and any desired ratio of gas and air to volume of work is possible. . . . An automatically controlled heat treating furnace has completely obviated (Page 53) retreating in an alloy steel plant. . . . Airplane speeds in excess of 300 miles per hour and cross country flights in 11 hours make rapid cooling in valves imperative. One manufacturer is offering a steel valve having a copper core in the head and stem (Page 42), with cooling characteristics being comparable to salt-sodium valves but at a cost comparable with solid steel valves.

Tons Less Trouble than Degrees

Manipulating steel ingots weighing as much as 240 tons is no trick for the manufacturer of large forgings, but maintenance of a proper forging temperature is. For large forgings, hydraulic presses are employed (Page 44) to insure better working of the metal in the center, but for small work the hammer method remains supreme.

Make Rate Rise Uniform, Is Demand at Chicago Hearing

CHICAGO—Competition of southern pig iron and coke in northern markets entered into the freight rate testimony here on the application of the railroads for a 15 per cent blanket increase.

G. H. Staat, traffic manager, Interlake Iron Corp., Chicago, in behalf of certain northern producers of pig iron and coke, gave data supporting the plea that if percentage increases result, all localities should be treated similarly, and no differentiation be made between the inter-territorial and intra-territorial rates on pig iron or coke.

Announcement was made by the interstate commerce commission that briefs must be filed by Sept. 18, and that oral arguments will be held, beginning Sept. 21, at Washington, whence the Chicago hearing was adjourned.

Combats Southerner's Testimony

Numerous organizations opposed the blanket increase at the Chicago hearings. The sessions were divided into three and four groups, one of which was devoted largely to cross-examination of witnesses previously heard.

Mr. Staat's testimony took exception to part of the testimony given at the first Washington hearing by C. E. Widell, of the Tennessee Products Co., Nashville, Tenn., in which it was suggested that on an inter-territorial movement from the south to the north, a different basis or lower percentage should be made than intra-territorial, either in the South or in the North. Said Mr. Staat:

"In dealing with the subject of pig iron rates from the South to the North, it must be borne in mind that practically all of the southern furnaces are at the source of supply of their coal, coke, iron ore and limestone, and the highest freight on any of these paid by any southern producer would be so small that a percentage increase would not be noticeable.

Some Own Railroads

"There are other southern producers of pig iron that have no freight charges at all, their raw materials being obtained on their own railroads and hauled short distances to their furnaces and ovens. Naturally, any increase in freight charges would not be involved on such self-contained operations."

In discussing rates affecting the northern lake-front furnaces, the witness pointed out that all would be compelled to pay an advance in rail haul on ore, coal, which in the main moves from the Crescents, and in some instances increases would result on limestone, if the rate increases are granted. He pointed out increases on coal would be multiplied 1.4 times, inasmuch as it takes 1.4 tons of coal to make a ton of coke, which is the round figure used to produce a ton of pig iron. He stated the increase per ton of iron ore would be doubled.

Another Increase on Ore

Interior plants would be affected similarly, the witness said, with respect to their initial increases on iron ore and the one increase on coal, but to this would have to be added the second increase from the Lake Michigan or Lake Erie docks on the iron ore. Mr. Staat said:

"If the 15 per cent increase is made on iron ore for the Chicago furnaces, it represents an increase of 27 cents per gross ton of pig iron, and on the coal to Lake Erie docks for trans-shipment to Chicago, the increase would be, as proposed, 36 cents per ton of coke.

"On the all-rail movement of coal to Chicago, the proposal was to make an increase of 46 cents a ton from the Crescents, which has the effect of making the increase on one ton of coke used 64 cents per ton of pig iron. Converting these figures, we find that, roughly, on our iron ore and our lake and rail coal, the increase would be 63 cents per ton of pig iron, and on our iron ore and all-rail coal, the increase would represent 91 cents per ton of pig iron."

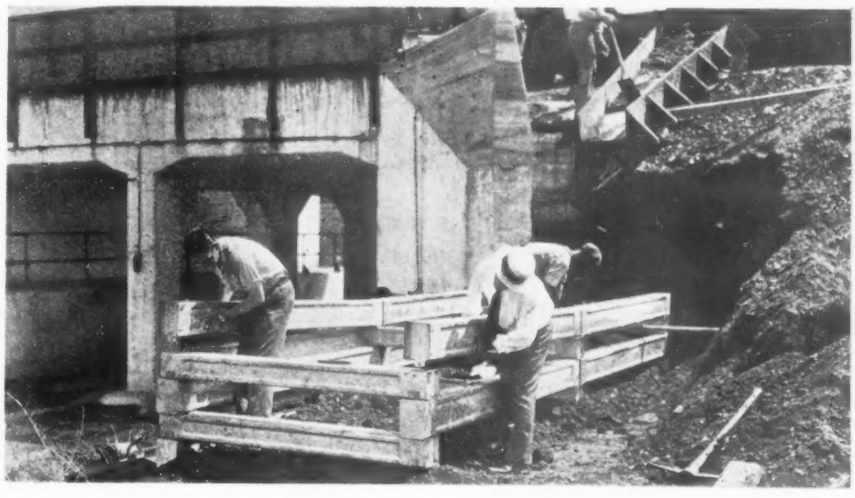
In view of the existing rate on pig iron to Mississippi river and northern Illinois consuming points, figures were submitted to show that Chicago would pay more of an increase in the aggregate than the South, under application of a uniform percentage increase, in connection with all movements. It is also pointed out that the pig iron rate of $4.42 from the Birmingham district to the St. Louis district would increase 66 cents, while the Granite City, Ill., furnace and coke interest in the St. Louis district, which the witness also represented, would have an over-all increase to the same delivery of about $1.05 per ton of iron.

Mr. Staat also objected to a per-car increase reported to have been advocated by certain southern pig iron interests, on the ground that this would work to the disadvantage of northern producers. He pointed out that a number of southern producers being self-contained would have no increased inbound and only would stand the outbound per-car increase.

Traffic Diversion Threatened

Agricultural interests, lumber, furniture, building stone, and a number of other individual companies and associates opposed freight rate advances at the hearing. C. P. Hoy, of St. Louis, representing the Illinois coal operators, said the railroads were losing 865,000 tons of freight to trucks, and if the rate increase is granted, they would lose 500,000 more tons. Operators and dealers from Indiana and Kentucky also protested and said all the short hauls would be diverted to trucks.

On every side, at the hearing, the threat was held out to the railroads that traffic would be diverted to truck or water. Testimony was submitted to show that nonferous metals now sent over land from Utah and California



Photo, Armco Culvert Manufacturers association, Middletown, O.

METAL CRIBBING INVADES WOOD AND CONCRETE FIELDS

Built of standard iron culvert stock, in 6 or 8-foot lengths, and held together by a sturdy interlocking device, these units now are being used for railroad and highway retaining walls, for bridge wingwalls, and for river and harbor bank protection work. They are paneled for strength. A 6-foot header weighs only 40 pounds, and an 8-foot stretcher only 50. It is claimed the cribbing can be installed more economically and with greater speed than when other materials are used

would be shipped through the Panama canal.

Revised Pig Iron Rates in West and South Suspended

Chicago—Proposal to make all freight rates on pig iron shipped from the Chicago area, Duluth, Granite City, Ill., Birmingham, Ala., and other southern points, 20 per cent of first-class rates has been held up by the interstate commerce commission in Washington.

Following joint petitions for suspension, filed by G. H. Staat, traffic manager of the Interlake Iron Corp., representing that company, Youngstown Sheet & Tube Co., Youngstown, O., and Inland Steel Co., Chicago, and a similar petition in behalf of the St. Louis Gas & Coke Co., Granite City, the commission has ordered a suspension to April 3, 1932, of the proposed rates, which were to become effective Sept. 3.

The suspension covers the proposed rates from the northern furnace points and all other southern furnaces, into Missouri, Kansas, Arkansas, Louisiana, Oklahoma, and Texas. The proposed rates would result in substantial increases over existing rates in virtually all instances.

New Short Haul Rates May Be Effective Oct. 15

New York—Provided the interstate commerce commission permits carriers to post the new rates within 30 days of filing, the proposed reduction in rates on iron and steel products moving within distances of not more than 100 miles in Central Freight and Trunk Line association territories probably will go into effect not later than Oct. 15.

The commission's recent decree that relief to be granted shall not include any line or route where the distance is more than 70 per cent greater than the distance over the direct line or route between the competitive points has thrown considerable burden on traffic clerks in working out the new combinations, particularly those in the East, where there are so many competing lines.

However, much of the preliminary work has long since been completed in connection with the "short haul" proposal, and, with railroad traffic departments concentrating their energies on this latest proposal from the commission, it is believed in some quarters that rates will be ready for filing around Oct. 1.

Should, then, the commission grant permission, allowed under the sixth section of the Interstate Commerce act, for the railroads to post the schedules within 30 days, it is believed that it would be only a question of two weeks or so at the most before they would become operative.

Industrial Disputes Show Rising Tendency

A reduction in the number of industrial disputes in 1930, compared with 1929, created a widespread belief that curtailment of employment had a tendency to allay unrest among those fortunate enough to be employed. Experience so far this year, however, does not bear out the theory, as with employment still more restricted than in 1930, labor disputes and the number of persons involved have increased.

In the first half of 1931, for which the bureau of labor statistics has just completed reports, the number of disputes was 415, or 80 more than the 335 in the same period last year. In the first half of 1929, when the employment index was near the peak, there were 484 disputes.

The number of persons involved in these strikes and lockouts reported to the bureau was 134,942 in the first half of this year, 43,486 more than in the first half of 1930 and 16,624 more than in the same period in 1929.

The number of "man-days" lost through the disputes in the first half this year was 2,722,863, indicating a wage loss in excess of $10,000,000—at a time when jobs were hard to get. The number of "man-days" lost in the same period last year was only 1,437,820, while in prosperous 1929 the disputes were protracted to the extent that 7,736,857 "man-days" were lost.

Young Is Gifford's Aide; Federal Work Speeded

Washington—Owen D. Young, chairman, General Electric Co., has accepted appointment as chairman of a committee to co-ordinate all local unemployment relief campaigns. Eighteen others have been named as members of the committee, by Walter S. Gifford, director of President Hoover's organization.

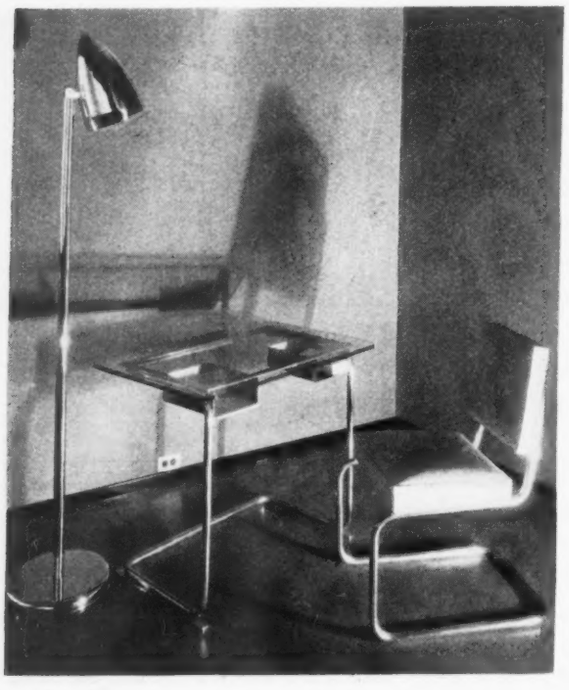
Another committee, comprising 17 industrialists, bankers, economists and leaders of organized labor, has been selected to study employment plans and suggestions for increasing employment. Many members of these two committees are members of the President's advisory committee, named several weeks ago.

Jobs for 100,000 will be provided by Jan. 1 by government work, it was announced by the President. More contracts for such work were placed in August than in any whole year in the history of the United States up to 1927. Projects so far authorized total 780, at a cost of $496,584,000, and the entire program authorized calls for a total outlay of $700,000,000.

Ratio of Ore to Steel And Iron Gains Slightly

Consumption of iron ore in the United States in 1930 amounted to 1.15 tons per ton of steel and iron, according to compilations recently completed. The amount of pig iron manufactured, exclusive of basic and bessemer, was 6,044,036 tons, reported by the American Iron and Steel institute. Production of steel ingots and castings totaled 40,699,483 tons —a total of 46,743,519 tons of steel and iron. For this, the ore consumed was 53,662,118 tons.

The ratio of ore to steel and iron in 1929 was 1.14; in 1928, 1.12;



Stainless steel in the form of tubing now competes with fine woods in the manufacture of furniture. The accompanying photo portrays a reading lamp, chair and desk made by the Garland Furniture Mfg. Co., Chicago, from steel supplied by the Allegheny Steel Co., Pittsburgh

and in 1927, 1.19. The ratio in 1930 indicates there was little change in the proportions of scrap used in steel and iron manufacture. For Lake Superior iron ore, the ratio of consumption to total steel and iron production was 0.97 in 1930, compared with 0.99 in 1929 and 0.97 in 1928.

Drop Forgers See Future In Aviation Industry

Problems confronting the drop forging industry were discussed by some 30 members of the American Drop Forging institute at the fall meeting of the organization held in Cleveland, Sept. 2-4. The meeting was scheduled coincident with the National Air Races because of the close relationship between forging and aircraft manufacturers and the promising future of the aeronautical industry.

A principal speaker was Philip P. Gott, manager, trade association department, Chamber of Commerce of the United States, Washington, who discussed business stabilization through trade associations. Numerous speakers appeared on the program, presenting topics intimate to the forging industry.

Officers of the association are: President, C. H. Smith, president, Steel Improvement & Forge Co., Cleveland; vice presidents, E. R. Bishop, president, Globe Forge & Foundries Inc., Syracuse, N. Y., and H. G. Stoddard, vice president, Wyman-Gordon Co., Worcester, Mass.; and secretary-treasurer, Paul A. Andrus, 405 First Trust & Deposit building, Syracuse, N. Y.

Gray Iron Group To Meet

The Gray Iron institute will hold its annual meeting at West Baden Springs hotel, West Baden Springs, Ind., Oct. 15-16. Details of the program are to be announced shortly. Headquarters of the institute are in the Terminal Tower building, Cleveland, and A. J. Tuscany is manager.

Study Blast Furnace Sales

Washington—In 1929 the value of products of blast furnaces was $771,425,000, of which 74.3 per cent or $573,171,000 was consumed by the producers and only 25.7 per cent of $198,254,000 was sold, according to an analysis by the department of commerce.

Albany Shops Reopen

West Albany shops of the New York Central railroad, virtually closed since Aug. 14, reopened with the employment of 1700 men on Sept. 8. Locomotive repair work is mainly responsible for the reopening.

August Ingot Output Less Than July by 8.35 Per Cent

ALTHOUGH steel ingot production for August, at an average daily rate of 66,133 tons, was below the 72,160 tons average for July the decline was not sufficient to go behind December, 1921, for a previously lower figure, the daily average for that month being 62,707 tons, which was the nearest low to the July production.

Production in August, on a daily basis, was 6027 tons, or 8.35 per cent less than in July and compares with 117,722 tons for August, 1930. The decline from July is less, in percentage, than the decrease from June to July, which was 9.6 per cent and from May to June, 17 per cent.

Total computed output of open-hearth and bessemer steel ingots, as compiled by the American Iron and Steel institute, 1,719,462 tons, occupied 31.13 per cent of capacity, compared with 1,876,149 tons and 33.97 per cent of capacity in July.

Eight months computed production in 1931 totals 18,864,134 tons, 42.90 per cent of capacity, compared with 29,561,602 tons, 71.32 per cent of capacity, in eight months of 1930.

The decline which has been almost steadily continuous since February, 1930, with slight upturns, shows a decelerating rate, indicative of approach of a turn upward as a bottom seems near in the rate of production.

Gas Association To Meet

The thirteenth annual convention and exhibition of the American Gas association will take place in Atlantic City, N. J., Oct. 12-16. Kurwin R. Boyes, 420 Lexington avenue, New York, is secretary of the association.

Bolt, Nut Meeting Sept. 25

The newly organized American Institute of Bolt, Nut and Rivet Manufacturers will hold a meeting in Cleveland Sept. 25. This was previously noted as being Sept. 5.

Steel Ingot Production—1930-31

95.21 Per Cent of Industry Reporting
Gross Tons

1930	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	3,157,761	441,572	3,599,333	3,778,235	27	139,935	69.89
Feb.	3,335,428	508,618	3,844,046	4,035,111	24	168,130	83.98
Mar.	3,513,269	539,616	4,052,885	4,254,331	26	163,628	81.73
Apr.	3,405,671	509,234	3,914,905	4,109,492	26	158,057	78.95
May	3,265,353	528,968	3,794,321	3,982,915	27	147,515	73.68
June	2,849,079	407,586	3,256,665	3,418,535	25	136,741	68.30
July	2,430,128	353,723	2,783,851	2,922,220	26	112,393	56.14
Aug.	2,541,367	374,467	2,915,834	3,060,763	26	117,722	58.80
8 mo.	24,498,056	3,663,784	28,161,840	29,561,602	207	142,809	71.32
Sept.	2,275,910	429,975	2,705,885	2,840,379	26	109,245	54.56
Oct.	2,165,341	399,704	2,565,045	2,692,539	27	99,724	49.81
Nov.	1,807,133	300,337	2,107,470	2,212,220	25	88,489	44.20
Dec.	1,659,026	226,788	1,885,814	1,979,547	26	76,136	38.03
Total	32,405,466	5,020,588	37,426,054	39,286,287	311	126,322	63.09
1931							
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
May	2,083,833	301,639	2,385,472	2,505,485	26	96,365	45.36
June	1,730,109	246,365	1,976,474	2,075,910	26	79,843	37.58
July	1,561,251	225,030	1,786,281	1,876,149	26	72,160	33.97
Aug.	1,462,469	174,631	1,637,100	1,719,462	26	66,133	31.13
8 mo.	15,756,478	2,204,064	17,960,542	18,864,134	207	91,131	42.90

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

Industrial Men in the Day's News

William A. Irvin, Vice President, Manufacturing Operations, United States Steel Corp.

AN operating man all his business career, he now will have increased scope for his ability developed over a period of 36 years.

IDENTIFIED with predecessors of the present sheet and tin plate subsidiary of the Steel corporation from 1895 to 1904, he has been continuously employed by it since its formation.

ASSISTANT to the operating vice president for 20 years, seven years ago he was elected vice president in charge of operations.

WILLIAM A. IRVIN, vice president in charge of plant operations of the American Sheet & Tin Plate Co., Pittsburgh, was last week made a vice president of the United States Steel Corp., in connection with manufacturing operations, a newly-created position. He will make his headquarters in New York. Mr. Irvin has been identified with the sheet and tin plate industry for the past 36 years and has been connected with the present American company in an operating capacity since its formation in 1904.

He was born in Indiana, Pa., Dec. 7, 1873, where he received his earlier education in the public schools. This was supplemented by night courses at Indiana State Normal school in that city. He entered the employ of the Pennsylvania railroad in 1888 as telegraph operator, and later became clerk and assistant freight and ticket agent. Mr. Irvin first entered the steel industry in 1895 when he became shipping clerk for P. H. Lauffmann Co. Ltd., Apollo, Pa., manufacturer of sheets and tin plate.

Working his way through various departments of the mill, he later became superintendent. The American Sheet Steel Co. took over the plant in 1900, and at that time Mr. Irvin was transferred to the general offices of the company in New York. Four years later, when this company and the American Tin Plate Co. merged to form American Sheet & Tin Plate Co., he was appointed assistant to the operating vice president with main offices in Pittsburgh. He held this office continuously for 20 years, after which time he was elected vice president in charge of plant operations.

Mr. Irvin is a director of the Keystone National bank, Pittsburgh, and a member of the American Society for Testing Materials, the Society of Automotive Engineers, and the Engineers Society of Western Pennsylvania, as well as Duquesne and Pittsburgh Field clubs and Pittsburgh Athletic association.

HARRISON HOBLITZELLE, since June, 1931, executive vice president of General Steel Castings Corp., Eddystone, Pa., and Granite City, Ill., was elected president at a meeting of the board Sept. 2. He succeeds R. H. Ripley, who resigned to become chairman of the board.

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Albert H. Shonkwiler resigned Sept. 1 as assistant superintendent, Otis Steel Co., Cleveland, to become affiliated with the Steubenville, O., works of Wheeling Steel Corp., Wheeling, W. Va.

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Carl Coffeen, district manager for several years of American Wire Fabrics Co., Chicago, has been appointed manager, wire netting department, Northwestern Barb Wire Co., Sterling, Ill.

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A. C. McCarroll is now auditor for Jones & Laughlin Steel Corp., Pittsburgh. He succeeds the late Joseph A. Doyle, whose death was noted in STEEL of Aug. 6.

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J. Gustaf Moohl, engaged in design and production of machinery for 24 years, has been appointed sales engineer, with headquarters in the Euclid Windsor building, Cleveland, for Cincinnati Milling Machine Co. & Cincinnati Grinders Inc. Sales Co., Cincinnati. Identified with the automotive industry for several years, he became affiliated in turn with Ingersoll Milling Machine Co., Beaman & Smith Co., and Cleveland Milling Machine Co.

S. E. Bergstrom has been named manager of the Detroit office at 401 New Center building. He attended Purdue university, and was with Buick Motor Car Co., Dodge Bros., and Nash Motors Co. as tool designer In 1925 he became affiliated with National Automatic Tool Co., as Chicago representative. Since 1927 Mr. Bergstrom has been actively engaged as special automotive milling

specialist for Cincinnati Milling Machine Co. Associated with him in the Detroit office will be F. M. Gertiser, O. W. Winter, J. A. Beebe, E. M. Levine, A. Foerster, A. H. Misel, and C. F. Stuemer.

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John P. Sykes, vice president, Baldwin Locomotive Works, Philadelphia, has been elected a director of the company to fill the vacancy caused by the recent death of Alva C. Dinkey.

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Paul Gay, for four years past chief engineer of the Charlotte, Mich., plant of Sterling Mfg. Co., Cleveland, electrical equipment, automobile accessories, etc., has been appointed chief engineer at Cleveland.

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Irving H. Jones, formerly associated with Crucible Steel Co. of America, Pittsburgh, has been appointed western district manager at 208 La Salle street, Chicago, for Molybdenum Corp. of America, Pittsburgh.

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Earl B. Bremer, for 13 years in the Chicago office of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently as manager of small motors section, has been appointed manager of appliance electrification with headquarters at East Springfield, Mass.

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William Dienenthal, of Dango & Dienenthal, Siegen, Germany, German associate of Edgar E. Brosius Inc., Pittsburgh, designer and manufacturer of steel plant equipment, has spent the past four weeks in the United States.

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D. P. King, has resigned as general superintendent of the Monessen, Pa., plant of Pittsburgh Steel Co., Pittsburgh, because of ill health. He has been identified with the Monessen plant ever since its first operation. No successor as yet has been appointed.

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James A. Carruthers, connected with the purchasing department, American Steel Foundries, Chicago, for 27 years, has resigned as of Sept. 1. In addition to his buying duties Mr. Carruthers had charge of sales of reclaimables, used equipment, and the development of markets for waste materials.

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A. J. Duncan, vice president, and J. C. McMilland, secretary-treasurer, Chase Foundry & Mfg. Co., Columbus, O., have been given full charge of the company's affairs and jointly succeed S. M. Chase, vice president and general manager, deceased. Both have been with the company more than 20 years. The company will add production lines and do job foundry work.

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C. W. Traughber has been appointed technical and metallurgical advisor, National Blower Co., Cleveland. Mr. Traughber formerly was with Anaconda Copper Co., New York; American Smelting & Refining Co., and other smelting plants for many years. He has had considerable experience in fume and dust problems.

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W. C. Buchanan, vice president, Keystone Steel & Wire Co., Peoria, Ill., was added to the directorate at the annual stockholders' meeting Aug. 31. He has been with the company for two years, having previously been affiliated with Floyd A. Deahl and associates and with Trumbull Steel Co., Warren, O.

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W. C. Bruton, for many years sales engineer working out of the Oakland, Calif., office of American Manganese Steel Co., Chicago Heights, Ill., has been appointed district sales manager for the Pacific Northwest territory comprising Oregon, Washington, British Columbia, and the Coeur D'Alene district in Idaho. Agency representatives, P. R. Hines, Lewis building, Portland, Oreg., and Paragon Supplies Ltd., East Vancouver, B. C., will work closely with Mr. Bruton, whose headquarters will be 411 Colman building, Seattle.

Harrison Hoblitzelle

New president of General Steel Castings Corp., whose photograph and sketch appeared in STEEL for July 23, page 21, inadvertently designated as George K. Hoblitzelle instead of Harrison Hoblitzelle

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A. G. Bradbury, formerly in charge of the Detroit office of International Derrick & Equipment Co., which last May was merged with Stacey Bros. Gas Construction Co., Cincinnati, Connersville Blower Co. Inc., Connersville, Ind., P. H. & F. M. Roots Co., Connersville, Ind., and Wilbraham-Green Blower Co., Pottstown, Pa., to form International-Stacey Corp., is division manager of the Michigan division. Headquarters of that division of International-Stacey Corp. recently have been moved from Jackson, Mich., to 501 Stephenson building, Detroit.

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Etienne Magdelenat Jr., son of H. Magdelenat, vice president of the Association Technique de Fonderie de Paris, and identified with Usines de Rosieres, Bourges, France, sailed for France Sept. 4, following a short visit to the United States, Etienne Magdelenat it a student at the Ecole Centrale des Arts et Manufactures of Paris.

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Joseph A. Carlin, formerly receiver for Hutto Engineering Co., Inc., Detroit, has been appointed general manager. Other appointments follow: Frank J. Jeschke, sales engineer; J. L. Navin, field engineer for Cleveland, Pittsburgh, Buffalo, Rochester and Syracuse, N. Y.; Ben O. Isom has returned to the company as factory representative for Detroit and Chicago; William F. Toepfer, factory representative for Philadelphia, New York and Boston, and James G. Young, foreign representative, to be located in Europe.

Obituaries

ALFRED H. MULLIKEN, 77, pioneer railway supply manufacturer and for more than 30 years president of Pettibone-Mulliken Co., Chicago, steel and gray iron castings and railway supplies, died Sept. 2, at New Canaan, Conn., where he had moved three years ago. Mr. Mulliken came to Chicago at 15 and started as a shipping clerk for Crerar, Adams & Co., railway supplies. Twelve years later he declined a partnership, and in 1880 with Asa G. Pettibone, who died 25 years ago, established the Pettibone-Mulliken Co. In 1885 the company sold its jobbing business to Crerar, Adams & Co., becoming exclusively manufacturers of railway equipment, and developing tools and supplies which have become standard in railroad use. When the Pettibone-Mulliken Co. was incorporated a few years later, Mr. Mulliken was secretary-treasurer, later becoming president. In 1899 he purchased the business of his associates, retaining the presidency until 1928, when he disposed of his Chicago holdings and located in the East.

During the World war, Mr. Mulliken represented the 14 railway frog and switch manufacturers of the country in the allocation of emergency war work for the government and the United States railway administration. Mr. Mulliken also was president and chairman of the board of Mulliken & Robers Inc., New York, investment banker. Mr. Mulliken was a director of the National

Association of Manufacturers, Continental-Illinois bank, Chicago, and railway business groups. He had been a member of the American Foundrymen's association and a member of other organizations.

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Edward J. Condon, 69, since 1919 president of Condon Engineering Co., Chicago, engineer and constructor, died recently.

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Henry A. Kries, 73, president of Henry A. Kries & Sons, Baltimore, machinists, died Aug. 24 at Bridgton, N. J.

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Herbert G. Copp, 60, director of purchases and member of the directorate, Deere & Co., Moline, Ill., died Sept. 2.

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Julius Lewinsky, 64, president, Lewinsky Iron & Metal Co., Milwaukee, died Aug. 17 at Elkhart Lake, Wis.

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Serwood Earl Martin, 45, general manager, Kittanning Brick & Fire Clay Co., Kittanning, Pa., for the last 15 years, died Aug. 31.

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John D. Nies, dean of engineering at Lewis institute, and vice president of Kimble Electric Co., Chicago, died in St. Charles, Ill., Aug. 22.

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Adam L. Gloor, 60, tool manufacturer for 25 years in Dayton, O., and Detroit, died at Dayton Sept. 1. He was owner of the Wayne Tool Co., Detroit.

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John F. Fierke, 71, for 22 years president of Illinois Iron & Bolt Co., Carpentersville, Ill., died at West Dundee, Ill., Aug. 27. He had been associated with the company since 1878, rising from assistant shipping clerk to vice president in 1905 and subsequently to president and chairman.

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R. H. Ober, of Jacobs & Ober, Seattle, civil engineers, died Aug. 30. He was one of the designers of Aurora avenue bridge, Seattle, now nearing completion, and was associated in planning water and light projects in that city which he served at one time as assistant city engineer and building superintendent.

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H. M. Easton, 55, New York, district sales manager of the Weirton Steel Co., died suddenly at New Castle, Pa., Sept. 3. He had been affiliated with the steel industry for approximately 30 years. He had been New York district sales manager since 1921, following various other posts with the Weirton organization.

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Charles A. Fickes, 61, formerly foundry superintendent, Detroit Malleable & Brass Works, Wyandotte, Mich., died recently in Canton, O. Born in Wooster, O., he began his foundry career with the McClain Co., Canton, remaining 27 years, for 12 years of which period he had charge of the foundry. During 1917 and 1918 he served as night superintendent, Timken Detroit Axle Co., Canton. In 1925 he went to Wyandotte, Mich., as foundry superintendent, Detroit Malleable & Brass Works, where he remained until May 4, 1931. He then resigned because of ill health.

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Andrew Forrest, 63, for many years connected with open-hearth departments of various steel companies, died in Chicago recently. Until last January he had been with Interstate Iron & Steel Co. unit, Chicago, of the Republic Steel Corp., as assistant general superintendent. Mr. Forrest joined the Interstate company in 1917 and had gained recognition for his work in the development of alloy and special steels. Prior to that time Mr. Forrest had been with the Chicago Heights, Ill., plant of Railway Steel Spring Co. He also was in the open-hearth department of Edgewater Steel Co., Oakmont, Pa., and for some years had been connected with Clairton, Pa., works, Carnegie Steel Co., Pittsburgh, and also Gary, Ind., works of Illinois Steel Co.

Steel Furniture Orders Drop Continues in July

For four consecutive months the value of steel furniture orders has declined, the condition existing in shelving also. Shipments in both classifications are further diminished, as the majority of the industry reports to the department of commerce in the following:

(In Dollars, 000 Omitted)

	Business Group		Shelving	
1930	New orders	Shipments	New orders	Shipments
July	1,802	1,786	644	661
7 mo.	15,666	16,337	5,595	5,565
Aug.	1,725	1,928	579	604
Sept.	1,796	1,854	553	542
Oct.	1,833	1,902	587	645
Nov.	1,587	1,632	468	502
Dec.	1,591	1,774	283	515
Year	24,198	25,429	8,065	8,374
1931				
Jan.	1,840	1,768	417	422
Feb.	1,478	1,563	401	382
March	1,487	1,522	455	481
April	1,424	1,481	408	423
May	1,306	1,305	506	409
June	1,272	1,221	452	449
July	1,092	1,074	328	371
7 mo.	9,900	9,933	2,969	2,937

Ohio River Steel Traffic Declines Again in July

Barge movement of iron and steel products in the Pittsburgh district fell off approximately 40 per cent in the first seven months of 1931, compared with the corresponding period of 1930. Decline is attributed largely to mills on the Monongahela. July movement over the Allegheny and Monongahela increased slightly over June, but the total for the Ohio again declined. Comparisons follow:

1930	Allegheny	Monongahela	Ohio
July	1,125	132,161	147,558
7 mo.	3,235	708,748	735,673
August	2,600	96,498	107,948
Sept.	5,100	106,079	109,129
Oct.	11,490	105,451	138,109
Nov.	17,850	75,202	95,644
Dec.	3,800	46,972	50,403
Year	44,075	1,133,950	1,236,906
1931			
Jan.	50	90,405	88,089
Feb.		58,847	75,264
March		76,137	104,792
April	1,250	57,751	91,570
May	1,330	35,373	59,611
June	500	21,340	46,945
July	717	21,917	39,300
7 mo.	3,847	361,770	505,571

Babbitt Production Falls To New Low in July

For the fourth consecutive month babbitt metal output declined, in July establishing a new low for at least the past two years when only 1,931,685 pounds was the aggregate production of leading interests reporting to the department of commerce. Declines were commensurate in the metal for sale and for producers' own use, as the following table shows:

In Pounds

1930	(a) Total production	(b) Sales	(c) Production for own use
July	3,060,962	2,160,505	900,457
7 mo.	29,039,795	22,021,078	7,018,717
Aug.	2,918,043	1,964,213	953,830
Sept.	8,892,287	1,850,468	1,041,819
Oct.	3,101,187	2,068,544	1,032,643
Nov.	2,695,087	1,904,256	790,831
Dec.	2,106,522	1,459,208	647,314
Year	42,752,921	31,267,767	11,485,154
1931			
Jan.	2,855,693	2,089,574	766,119
Feb.	2,507,222	1,819,749	687,473
March	2,661,211	1,829,477	831,734
April	2,560,243	1,844,311	715,932
May	2,408,781	1,678,204	730,577
June	2,306,940	1,605,009	701,931
July	1,931,685	1,420,265	511,420
7 mo.	17,231,775	12,286,589	4,945,186

(a) By 43 plants. (b) By 33 manufacturers who produce for sale, including 5 who also report consumption of own metal. (c) By 15 establishments which manufacture their own metal, including 5 which also produce for sale.

Sheets for Coating Taxed

Canadian duty on sheets intended to be coated with other metals than tin on Sept. 1 became 10 per cent general, 7½ per cent intermediate and 5 per cent preferential, states the bureau of foreign and domestic commerce, Washington. This is the same as the duty effective since June 2, 1931, on sheets intended to be coated with tin.

Here and There in Industry

AETNA-STANDARD ENGINEERING CO., Youngstown, O., recently has acquired control of United States letters patent granted to Lawrence C. Steele, covering an improved method of manufacturing metal sheets. The Steele patent covers the method or process of these operations. The Steele method eliminates by mechanical means the gruelling labor of the old method by conveying the heated bars or sheets from the furnace to the mill, feeding and catching the metal at the mill during the rolling process, doubling and returning the packs to the furnace for reheating. By this method, far greater production is obtained at a greatly reduced cost without jeopardizing the quality of the finished product. Aetna-Standard also owns licenses upon mechanical catchers and other equipment under detail patents granted to the late Arthur R. McArthur.

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Carson, Marshall & Co. Inc., Franklin Trust building, Philadelphia, has been appointed exclusive sales agent in eastern territory for foundry coke produced by the Potter Coal & Coke Co.

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General Automatic Lock Nut Corp., General Motors building, New York, has appointed the Eccles & Davies Machinery Co., 320 South Pedro street, Los Angeles, its agent for the Pacific coast and Hawaii.

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Stearns Rogers Mfg. Co., Denver, has booked an order for 40 special high test semisteel castings, weighing 230,000 pounds, for conduit lining for the Eleven Mile Canyon reservoir being built for the Denver board of water commissioners.

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Robbins & Myers Inc., hoist and crane divsion, Springfield, O., has appointed W. P. & R. S. Mars Co., Duluth, exclusive representatives for the sale of its hand and electric hoists, cranes and trolleys in northern Minnesota and the upper Michigan peninsula.

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Hardie-Tynes Mfg. Co., Birmingham, Ala., has received a contract from the bureau of aeronautics, navy department, for two helium gas compressors, each of approximately 500 cubic feet capacity, four stage, built for working pressures of 2500 pounds per square inch, to be driven by 200-horsepower synchronous motors at 285 revolutions per minute. One will be stationary and the other mounted on a specially designed railroad car, for use at helium sources and in transporting helium to dirigible airships when needed. The stationary compressor will weigh about 25,000 pounds and the portable unit with its car and equipment about 70,000 pounds.

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National Acme Co., Cleveland, and Windsor, Vt., has entered into a license agreement with the Dardelet Threadlock Corp., New York, to manufacture and sell bolts, nuts and screw machine products threaded with the Dardelet self-locking screw thread.

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Altorfer Bros. Co., Peoria, Ill., washing machines and allied equipment, has reopened its plant, following a shutdown of two weeks. The plants during the shutdown were put in readiness to start production of washing machines for the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

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Bethlehem Steel Corp. is moving its offices at Philadelphia from the Widener building to the Broad Street Station building about Oct. 1. Offices of its subsidiaries, the McClintic-Marshall Corp., now in the Morris building, and the Kalman Steel Corp., now at 1608 Walnut street, will also be moved to quarters adjoining the parent company.

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Millholland Sales & Engineering Co., Indianapolis, has been reorganized under the name of Millholland Corp. William K. Millholland is president, R. A. Millholland and Ernest Millholland vice presidents, Norman K. Millholland secretary, Donald M. Millholland treasurer and Edward E. Gates and Joseph P. McNamara directors.

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City Machine & Tool Works, Dayton, O., has booked what it terms "two of the largest single orders ever placed for gear chamfering and gear burnishing machines." Each order is for 17 machines, complete with all equipment, and are partially the outcome of greater attention being paid to transmission by the automobile industry.

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Central Iron & Steel Co., Harrisburg, Pa., announces the opening of a southeastern sales office located at suite 314, William-Oliver building, Atlanta, Ga., in charge of Stanley A. Hunt, district sales manager. Mr. Hunt has been connected with the New York state sales offices of the company for several years in the capacity of assistant district sales manager.

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Jenkins Vulcan Spring Co., Richmond, Ind., maker of automotive replacement springs, will sell its machinery and equipment at public auction Sept. 15 under management of the Industrial Plants Corp., Columbus, O. Included are 11,000 new replacement springs, 110 tons spring steel and a large volume of machinery and scrap metal.

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Wellman Engineering Co., Cleveland, has been awarded the contract for a mooring mast for dirigible aircraft for the navy department, to cost $119,000. It is to be delivered at Lakehurst, N. J., in about seven months for installation and tests and then sent to the new dirigible base to be constructed at Sunnyvale, Calif. It is designed for use on standard railroad tracks, similar to one recently delivered at Lakehurst, with added features.

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International-Stacey Corp., Columbus, O., has opened division sales offices at 2192 Railway Exchange building, St. Louis, in charge of B. T. Ehrnman, division manager. He formerly was in the company's Chicago office. For several years he has been associated with the Roots-Connersville-Wilbraham division in the sale of gas pumps, meters, blowers and other equipment. At St. Louis he will also have charge of the sale of the other lines produced by the company.

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Page Steel & Wire Co., Bridgeport, Conn., has opened a district sales office for the Southeast at 1520 Healey building, Atlanta, Ga. It will be in charge of R. J. Teeple and will cover distribution of all Page products in the southeastern district, including woven wire fence, wrought iron fence, welding wire, highway guard and general wire products. Mr. Teeple has been connected with the fence department of this company for ten years and for three years has been in charge of the chain link fence division.

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Farrell Birmingham Co. Inc., Ansonia, Conn., has opened a branch office at 1059 First National Bank building, Chicago, in charge of Harry Temporal, transferred from the office at Akron, O. He has been a sales representative of the company since 1910, first at Ansonia, transferred in 1922 to the Cleveland office and in 1928 to Akron. The office at Akron, now in charge of Andrew Hale, has been moved from the United building to 2710 Central Depositors Bank building.

Fairchild Aerial Surveys

BEAMS FROM BROADWAY

NEW YORK

NEW YORKERS wrestle with hundreds of tons of steel daily, lose and pay for the privilege. Their combat is with subway turnstiles.

With the early opening of the new city operated Fulton-207th street line, 140 tons of steel will enter the lists in the form of 309 new turnstiles, 223 low entrance barriers which will garner the most of the nickels, 78 high entrance and 8 high exit gates.

There are 28 stations on this route, and 50 tons of wrought steel and copper-bearing steel pipe will be required for guard railings and high exits. Vulcan Rail & Construction Co., Brooklyn, has the contract for fabricating and installing turnstile equipment.

Plates, sheets, angles and pipe are used in construction of subway turnstiles, No. 10 gage sheets being used extensively in the low entrance equipment, which weigh 670 pounds each, high exit and high entrance weighing 1500 pounds. The base of all turnstiles is a gray iron casting.

With the exception of the exit gates, all have sensitive mechanical machinery which releases the arms, registers the coin and locks and unlocks the entrance every quarter turn. Each turnstile includes several welded parts, and the frame also is welded.

No Subway Steel Up

Structural steel fabricators will get little tonnage for subways this year. From 200,000 tons in 1930 to practically nothing leaves a big hole in New York structural business. This has been partially filled by requirements for a viaduct across the Jersey meadows, a new route to the Holland tunnel in northern New Jersey. This work has been expedited by the New Jersey state highway commission.

Completion of main construction and tunneling on the new Manhattan subway system, however, has resulted in contracts for much equipment, including rails, station finish, block signals, ventilation, drainage and gratings.

Steel Ventilates Tubes

Subway ventilation is of great importance in case of accidents and emergency. And only in case of emergency is the intricate machinery for ventilation of the tubes set in motion automatically. Steel plays an all important part. Work is under way on installation of the ventilating system for the new city-built system. There are 22 fans being installed, ranging from 8 to 5 feet in diameter and weighing 140,000 pounds, including housings, but not motors and gears.

Buffalo Forge Co. made the fans of rust resisting metal with a minimum thickness of 0.14-inch in the fan blades. The system also calls for 1700 dampers, each of sheet steel, specified rust resisting, 4 by 3 feet with a total weight of 450,000 pounds of 0.14-inch sheets. Peerless Iron Works supplied the steel.

Wrought iron pipe, 35,000 feet of it, ¾-inch in diameter, is also required for an air line. Fans have a capacity of from 195,000 to 55,000 cubic feet per minute. Squirrel cage induction motors of from 20 to 100 horsepower, or a total of about 1000 horsepower, drive the fans. Wagner Engineering Co. has the general contract.

This system is primarily for emergencies, to clear the tube of smoke in case of fire or a burned-out train. Fans are located between stations. Ordinarily air passes through open dampers in the walls of the tube and is expelled through sidewalk gratings. In case of accident, the fan in any given section is set in motion from a central control. Dampers in the air chambers are automatically closed and kept closed by the airline.

Fans draw in smoke through their own chamber while all others are closed, the exhaust passing through the sidewalk gratings as is the case with air when the fan is not revolving. There are 22 switches or controls in the central operating room, any one or group of which controlling various stations can be operated at the same time. All fans are gear-driven.

'Flag Up' on Cities Service

Flag is up on the Cities Service building, downtown Manhattan. This is the fourth highest building in New York, 66 stories, 840 feet in the air. Somewhat isolated on Pearl street from the big pile around Wall, this structure erected for the Doherty interests occupies an outstanding place in the skyline. James Stewart & Co. are the general contractors and Taylor-Fichter Steel Construction Co. placed the steel, about 20,000 tons.

It will be the first business structure to utilize escalators and double-deck elevators extensively. The first six floors will be served by escalators, operated by the link chain and gear, installed by the Otis Elevator Co., as are the elevators. Nothing is moving in the system as yet, however. The addition to the Metropolitan Life Co. building will also include escalators for lower floor transportation.

Cities Service building "went aluminum." The tower, windows and interior and exterior ornamentation

will be of that metal, all but the windows being furnished by the General Bronze Co. Several of the largest buildings recently completed in New York are also of aluminum finish, including 29 Broadway. The trend toward light metal finish, both exterior and interior, is pronounced, but noncorrosive steel alloys are being given a hard fight by aluminum.

Light metal finish is contagious. A large Brooklyn store in the shopping district some time back blossomed out in a new aluminum store front. The next store caught the fever and still another until the district for more than a block now sports new bright finished fronts. Influence of noncorrosive steel on the Empire State building is also noted in tentative plans for several structures in the mid-town section, which call for steel alloy decorative designs to harmonize with New York's highest building.

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Final contracts are being completed for the George Washington and Kill van Kull bridges being erected by the Port Authority. The former opens for traffic in October and the Staten Island-Bayonne span one month later. Toll booths, toll houses and flood light towers are being completed, all steel frame, aluminum covered. Selbach-Meyer Co. supplied 50 tons of steel for the Washington bridge booths and General Bronze Co. the aluminum. Auf de Heide Construction Co. has the contract for the Kill van Kull booths and also the Washington bridge flood light towers.

Building Pipe Is Welded

More than 50 miles of welded pipe, large and small, is being installed in the New York Hospital-Cornell Medical Center. This is one of the largest interior welding jobs. Welded pipe in building construction is gaining steadily. Much of the pipe in the Empire State and Chrysler buildings is fabricated by the oxyacetylene process.

Another striking example is the Cathedral of St. John the Divine. The British Embassy building at Washington has welded panel heating, all radiation equipment being concealed in walls and ceiling. Welded aluminum roofing is also meeting with success. Master plumbers' organizations are taking an active interest in welding for pipe services and several times during the last year have asked for demonstrations of the various methods.

Electric welding in structural frames continues to attract attention, although the old fashioned New York building code, now being revised, prevents this method except by special permission. However, the oxyacetylene method is the leading process for interior piping.

Among several factors influencing plumbing and heating contractors toward welding is cheaper and easier insulation and elimination to a large degree of special cast fittings. The claim is also made that welding makes easier and simpler work on the drafting board, making estimating less difficult without standard fittings.

More extensive use of metal trim on the modern building also has stimulated welding in building construction, giving an unbroken finish to the new alloys. An important factor in the use of welding in construction of buildings has been the highly specialized service offered contractors on the part of welding exponents, but more and more heating and plumbing contractors have mastered the rudiments of welding, at least, and many of these have developed their own specialized welding organizations.

More Bids Being Put In

Delivery on finished material for large engineering projects is an important factor in engineers' recommendations for contracts. Decided improvement is noted in delivery of large castings and heavy finished steel mechanical products during the last 18 months. Every contract inquiry of any volume is bringing out five or six times as many requests for specifications as two years ago.

Some of these firms do not bid themselves, but seek information as to needs for materials. More are submitting tenders, however, and some are in no position to meet delivery requirements. An engineer checking over a list of 37 firms who had paid $5 for plans calling for cast iron and steel sluice gates, estimated not more than six could profitably handle the contract and expedite delivery. He claimed two years back not more than half a dozen would have been interested in the contract. Mill and fabricating equipment play an important part in heavy engineering needs.

Windows Go Nonferrous

Experiments with some of the chrome nickel steel alloys are being made by makers of metal windows, but due to recent low prices for aluminum and bronze little has been accomplished in the way of volume selling. More than 132 3/5 miles of sash chain will be required for the 28,000 double hung steel windows to be furnished for the Radio City-Metropolitan buildings by the Campbell Metal Window Co.

Steel contracts have been placed for approximately 3500 tons of sheets, cold strip and sash weights, while enclosed radiator covers furnished with the windows will take about 630 tons of sheet steel. This is the largest contract for steel ever placed for windows, each of which will weigh 250 pounds, the radiators averaging 45 pounds.

The windows are similar to those furnished by the Campbell company for the Empire State building, being welded and formed, with galvanizing after fabrication. About 25 feet of sash chain is required for each window. Hardware will be bronze, and more than 20,000 pounds will be required. The metal windows have a glazed finish with no exposed screws on either side. The Campbell contract is the largest ever taken for windows and totals more than $1,000,000.

Business News of Week at Washington

SENATOR FLETCHER of Florida has suggested that the interstate commerce commission and the department of agriculture co-operate in formulating a plan to reduce the cost of distribution of agricultural products.

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Commerce department states that in July world wide shipping was 16 per cent greater than at the beginning of this year and 77 per cent greater than on July 1, 1930.

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Walter S. Gifford, director of the President's organization on unemployment relief, has made it plain that the campaign for funds will not be a national movement but for local funds only.

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The administration has not yet given any consideration to the question of taxation, it has been reported from the White House.

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William N. Doak, secretary of labor, has announced that no soft coal conference will be held. Out of 160 operators to whom letters were sent asking them about attending such a conference, 101 either said that they would not attend or did not answer the communication.

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Seven bids for the leasing and operation of Muscle Shoals were received by the newly created Muscle Shoals commission. The names of the bidders have been withheld from publication for the time being.

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Immigration continues to decline. July immigration was 10.2 per cent less than June, and less than half the monthly average for the fiscal year ended June 30.

EDITORIAL

Air Conditioning Promises New Uses for Steel

RECENTLY a number of business men who specialize in the construction and operation of high class apartment houses and residential hotels were discussing various aspects of the problem of obsolescence as applied to buildings of this type. They had agreed upon the necessity of installing refrigerators and many other modern appliances, when suddenly the conversation shifted to air conditioning.

"I think it would be a serious blunder," said one operator, "to erect an apartment or hotel today unless it can be provided with adequate equipment for cooling as well as heating the air. A building lacking facilities for air conditioning will be at a serious disadvantage in a few years, when practically all new structures will be equipped with efficient systems which provide heat in winter and cool air in summer."

Those who had the opportunity during the past abnormally hot summer to observe the appeal made by artificially cooled air will agree that the apartment manager's reasoning is sound. Stores and shops equipped with cooling apparatus were noticeably more popular than those which relied upon fans and other traditional methods of ventilation. On warm days the flow of patronage to air conditioned restaurants was especially heavy. A railroad which had the enterprise to equip one of its passenger trains with an air conditioning system was rewarded promptly with an increase of about 400 per cent in the number of passengers carried. For several years the leading theaters have considered artificial cooling and ventilating essential in maintaining summer patronage.

Cooling Apparatus Will Assume Status As Standard Building Equipment

To date the bulk of experience with air conditioning has been gained through the use of equipment installed after the buildings have been erected. Only in the last year or two have engineers been in a position to design their apparatus as an integral part of a building. From now on air conditioning equipment more and more will be considered a major factor in building construction. In certain types of structures, such as hotels, department stores, theaters and other public or semipublic buildings, air conditioning will assume equal rank in importance with elevator, power, water and other services.

The steel industry should interest itself in the development of air conditioning because it represents a growing consumer of sheets, strip, tubes and other forms of finished steel. Moreover the design of conditioning apparatus still is in the formative stage. Numerous changes will occur in the next few years. Competitive systems will be introduced. Alternative materials will be proposed. Representatives of the steel industry should be on the ground to see that the air conditioning engineers and contractors are given every opportunity to use steel intelligently.

Evolution of Conditioning Systems May Affect Design of Buildings

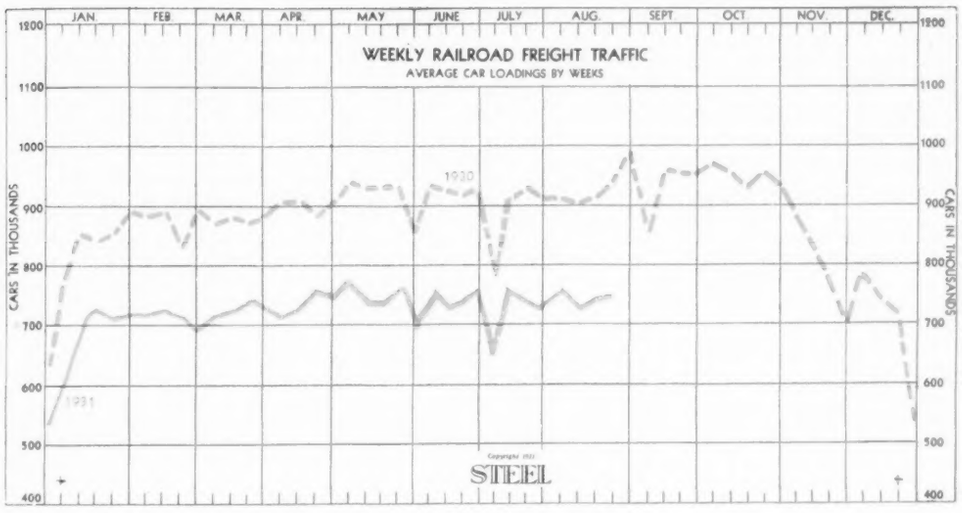
At the present stage of development it is difficult to foresee the extent to which this new industry will influence the construction of buildings. Already architects have been bold to say that it will hasten the arrival of the windowless structure. If this prediction is correct, the framing of fabricated steel will be altered and traditional practices in the design of structural steel will be affected.

Also it has been suggested that the evolution in air conditioning, coupled with the present complicated problem of carrying pipe, conduit and cables vertically in high buildings, may induce changes in column construction. In one building erected recently the columns were of hollow box-like design, using plates instead of the usual column sections. The space inside the columns was utilized for plumbing, power, lighting, telephone, ventilating and other service lines. If there is any chance that this practice will become general, the steel industry should know it in advance and prepare to meet it.

If it develops that the most economical method of air conditioning is to utilize a single distributing system for heating in winter and cooling in summer, many changes will occur in the design of residences. Already architects are flirting with the idea of concealed radiators. The idea of heating through wall spaces has been broached on numerous occasions. Other radical innovations have been proposed. With air conditioning in the ascendancy, impetus might easily be given to one of these suggestions which would result in marked changes in design.

The steel industry will do well to watch developments in air conditioning closely. Its growth will bring new tonnage to the mill books.

THE BUSINESS TREND



1930		1931	
Aug. 22	940,558	Aug. 22	748,711
Aug. 15	922,823	Aug. 15	742,736
Aug. 8	904,157	Aug. 8	734,780
Aug. 1	919,781	Aug. 1	757,293

Business Will Improve When Houses Are in Order

IN AN interesting discussion, "Why a Depression—and How To End It," Frank Wilbur Main declares that business will pick up when a sufficient number of companies have "cleaned house."

His reasoning is refreshing in its simplicity. He states that speaking generally, concerns with average ability make some money in good times. In prosperous periods, even concerns of very mediocre ability make money. At the height of a boom so many companies make money so easily that soon thereafter the whole structure topples over.

In depression institutions with mediocre and less than average ability fail to make money and even companies with able management find it difficult to make a good showing.

"Until the pendulum swings just as high above the average in its inclusion of well operated concerns as it did below the average in its previous inclusion of poorly operated concerns, the trend is definite and positively downward, deeper and deeper into the valley of depression."

Turning Point Comes When Enough Firms Get on Right Side of Ledger

Mr. Main believes that business climbs out of a depression only as individual concerns put their own affairs on a satisfactory and profitable basis.

"When a sufficient number of concerns place their affairs on such a basis, business will climb rapidly . . . for the reason that operations and profits for many companies again are on the right side of the ledger."

Mr. Main's theory rings true. Unfortunately many companies made no attempt to put their houses in order until May, 1931, when as a result of the collapse of the first-quarter spurt of improvement, business leaders finally were convinced that they must resort to drastic measures of economy.

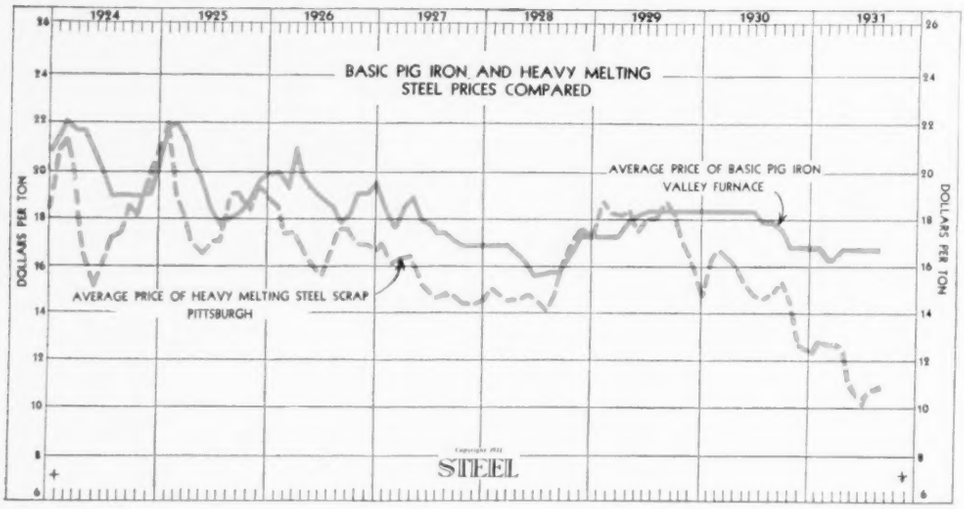
Ability To Make Money on Small Volume Will Be a Good Sign

In the four months that have elapsed since that time business has gone a long way in cleaning house. When the earnings reports of a considerable number of companies show that industry is beginning to make a profit on the prevalent small volume, then it will be evident that an improvement in orders is just around the corner.

The first week of September brought a few encouraging signs of awakening interest on the part of buyers. Commodity prices remained practically unchanged from previous levels.

However, steelmaking activity has not yet been affected. The rate in the first week of September still was above the 30 per cent mark. The extremely low output of pig iron in August was not unexpected, but the further net loss of seven stacks during the month points to a slow start in pig iron production in September.

The low yield of pig iron and steel ingots in August definitely blasts the hope once held that July, 1931, would prove to be the turning point, repeating the performance of July, 1921.



Basic Pig Iron

	1931	1930
Aug.	$17.00	$18.00
July	17.00	18.20
June	17.00	18.50
May	17.00	18.50

Heavy Melting Steel

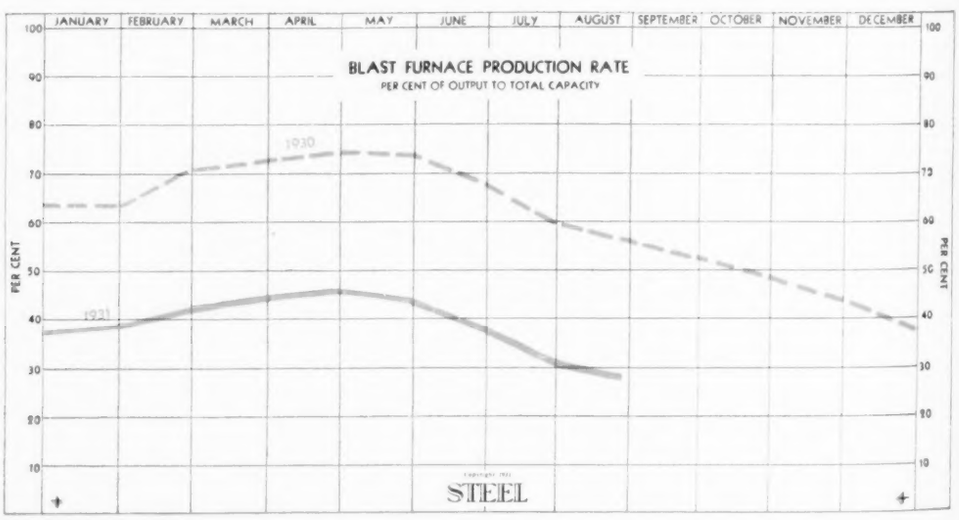
	1931	1930
Aug.	$10.70	$15.20
July	10.50	14.90
June	10.30	15.10
May	11.25	15.40

August Average for Heavy Melting Steel Again Makes Small Gain

Despite slow buying and generally inactive markets in scrap, the August average for heavy melting steel, Pittsburgh, took its second upward step toward closing in the wide gap between it and the quotation for basic pig iron. At $10.70 the average for the past month was 20 cents higher than that of July. Basic pig iron, valley furnace, was steady for the fifth month at $17, in a quiet market. Just a year ago a temporary reaction set in against the long-continued decline in heavy melting steel and the August, 1930, quotation was $15.20 compared with $14.90 in the previous month. The gain carried only into September, however, and then the decline was resumed.

Number of Active Stacks Is Lowest Since August, 1921

On Aug. 31 there were 75 pig iron furnaces in operation, seven less than on July 31. It was the smallest total of active stacks since August, 1921. The ratio of production to capacity dropped from 32.7 per cent to 28.7 per cent. A year ago the industry was operating at 57.8 per cent and was on an uninterrupted decline from 75.4 in April of that year to 38.1 per cent in December. Five steelworks stacks were blown in and 11 were shut down in August, while in July two became active and eight inactive. In the merchant class one resumed and two were blown out in August, compared with a loss of three in the previous month. The net loss in June amounted to 14 stacks.



Per Cent

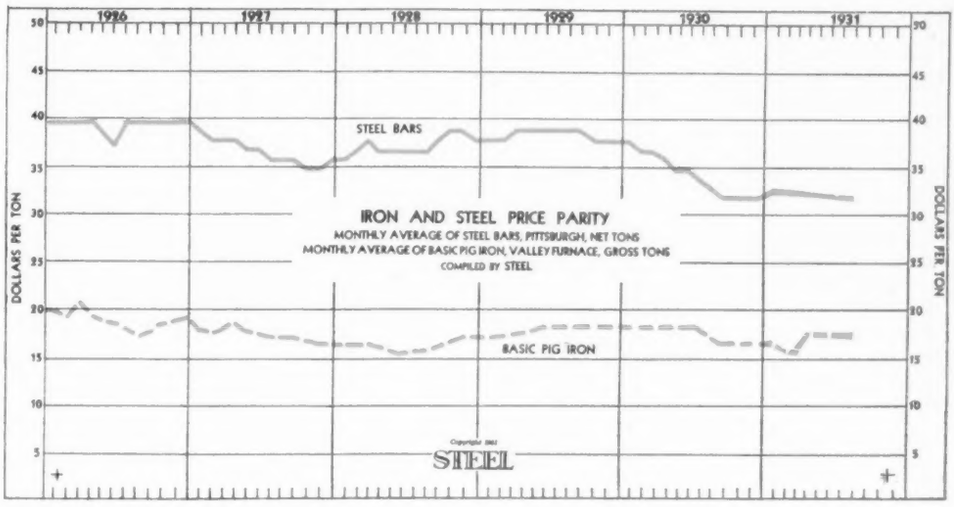
	1931	1930
Aug.	28.7	57.8
July	32.7	60.3
June	37.9	69.3
May	44.7	74.2
April	46.5	75.4
March	45.4	74.5
Feb.	42.5	72.1

Steel Bars

	1931	1930
Aug.	$32.00	$33.00
July	32.00	34.00
June	33.00	35.00
May	33.00	35.00
April	33.00	36.00
March	33.00	37.00

Basic Pig Iron

	1931	1930
Aug.	$17.00	$18.00
July	17.00	18.20
June	17.00	18.50
May	17.00	18.50
April	17.00	18.50
March	16.75	18.50

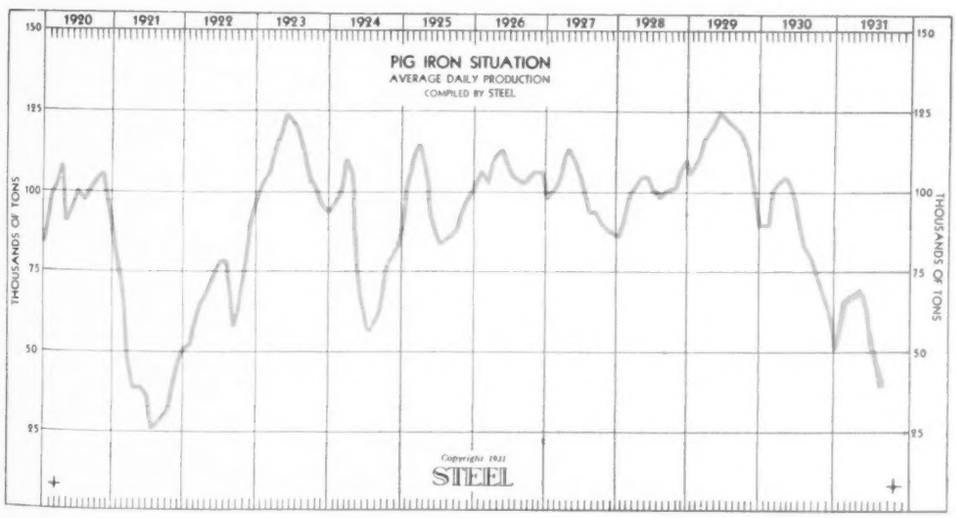


Quotations on Steel Bars and Basic Pig Iron Hold Steady

There was no change in the spread between steel bars and basic pig iron during August. Bars at Pittsburgh held at the same quotation, $32, and basic pig iron at valley furnaces again was at $17. After being quoted at $33 for the first six months of the year steel bars entered a range of $32 to $33 early in July, the lower price prevailing on tonnage business. It was the fifth month of steady price for basic pig iron, the foundry and malleable grades also being quoted at the same figure. A year ago, basic pig iron, valley furnace, dropped from $18.20 to $18 and steel bars declined from $34 to $33. In August, 1929, bars were $39 and pig iron was quoted at $18.50.

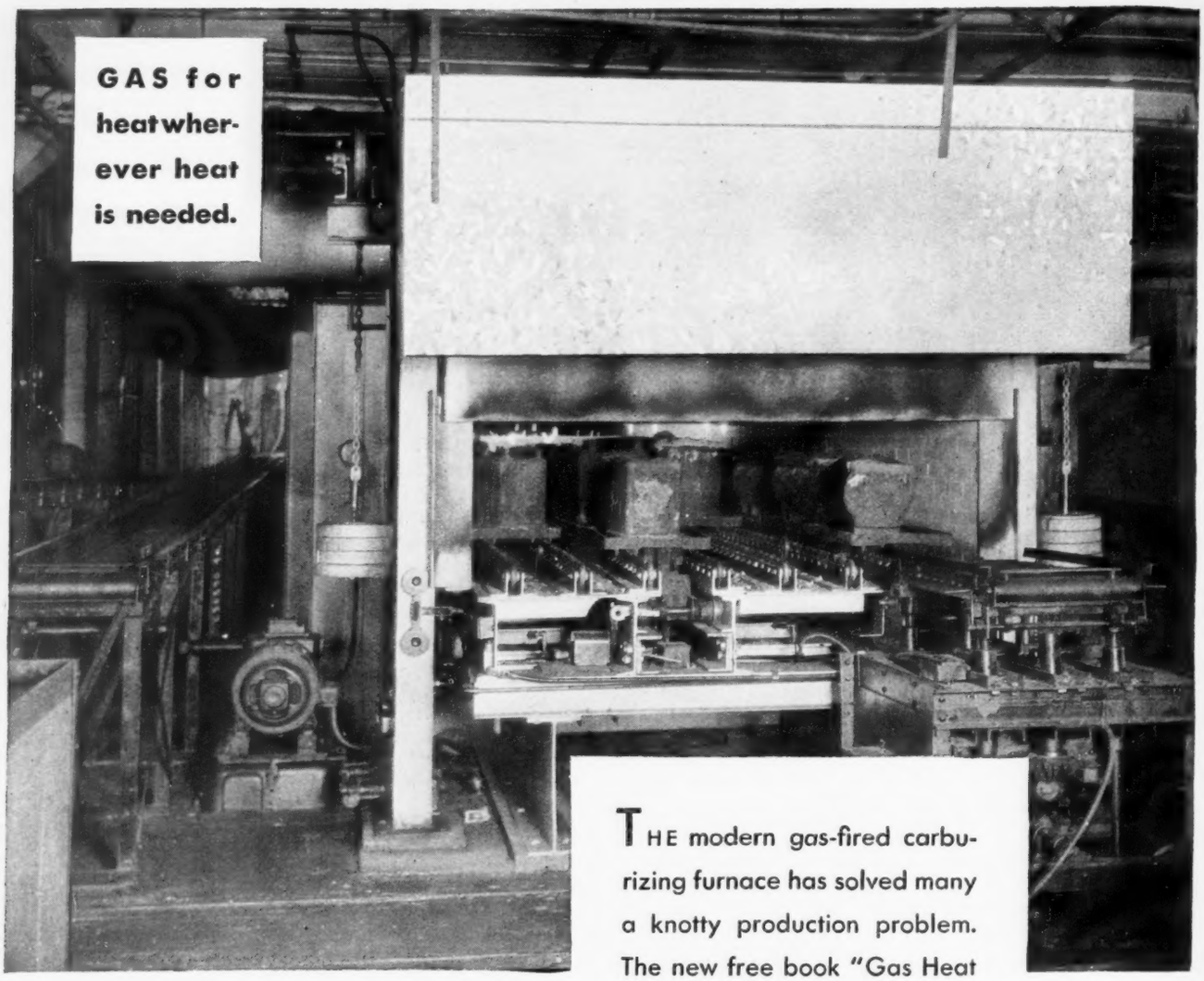
Daily Output of Pig Iron Is 38.5 Per Cent Below Spring Peak

The recession in pig iron output during July was the fourth successive downward step and brought the production rate very near the lows of 1921. While daily average production dropped 14.9 per cent in July and a loss of nine stacks was reported, the August drop was smaller, 12.7 per cent, and the net loss in active furnaces was seven. The daily rate, 41,201 tons, compared with 47,170 tons in July and 81,455 tons in August, 1930. Output reached its peak at 66,986 tons per day in April after a slow climb upward from 53,732 tons in the preceding December, and since touching that peak has dropped back 38.5 per cent to just above the rate of October, 1921.



	1931	1930
		Tons
Aug.	41,201	81,455
July	47,170	85,110
June	54,599	97,817
May	64,355	104,564
April	66,986	106,371
March	65,448	104,930

Gas HEAT for CARBURIZING



THE modern gas-fired carburizing furnace has solved many a knotty production problem. The new free book "Gas Heat in Industry" may help you solve a few knotty problems.

AMERICAN Gas ASSOCIATION
420 Lexington Avenue, New York

Modern high-speed rod mill. A flying shear in front of the workman cuts the stock without impeding its progress

Courtesy American Steel & Wire Co.

Wire Products Find Wider Usage

By H. R. SIMONDS
Associate Editor, STEEL

WHEN changing styles caused a falling off in demand for hairpins, a new product, bobby pins, came into use and this new product has increased in popularity until now its use has practically offset the decline in hairpins. In a similar way thousands of new uses for wire have sprung up to offset the gradual decline in some of wire's major markets, such as fence, nails and telephone wire. As a result, the ratio of the country's total wire output to the total finished steel tonnage has held during the past five years nearly constant at 7 per cent. In recent years welding has become one of the wire industry's best friends for not only has it opened a wide field of wire application through new fabrication methods, but the actual use of filler wire in the process of welding has jumped in the space of a few years from a negligible item to a total between 40,000 and 50,000 tons a year. Welding wire is used for both gas and electric welding. Until recently it usually has been uncoated in this country. Coated wires now are coming into wider use, however, as coated or fluxed wires are used to obtain specified physical characteristics in the deposited metal. The nature of the coating varies according to the work to be done and the method employed. For electric welding a coating of iron oxide and lime commonly is used, although many patented flux coatings also are in extensive use. For oxyacetylene a copper coated wire is most common. About 10 years ago automobile tire manufacturers tried molding a tire with a steel wire set in the center of each bead. The object of this wire was to prevent the tire from stretching and coming off the rim in use and the results were so favorable that today nearly all high-grade tires use several wires and most large tires have seven or eight or more in each bead or a total of 16 or more to a tire. For the entire output of automobiles and trucks in a year, the

Courtesy Wickwire Spencer Steel Co.
Pouring molten steel from ladle to ingot molds

total of 5000 tons of steel wire is required for tires. Of course there are other uses for wire in the automobile industry. Skid chains are made of wire and the total tonnage is high. For chains everywhere one manufacturer of wire estimates that 250,000 tons of chain stock is used each year. The use of wire for the spokes of automobile wheels is well appreciated, but less obvious is the wire used inside of the automobile valve stems, nuts and bolts, cotter pins, hinge pins and dozens of other items. An interesting use of wire is found in roller bearings. Rectangular section wire in the form of finely tempered close coiled springs forms the rollers of high grade bearings.

Flat Wire Widely Used

Flat wire is used in the manufacture of many highly developed quantity output products such as typewriters, adding machines and automatic telephone exchanges. Other flat wire uses are found in skates, sleds, cash registers and most slot machines such as subway turnstiles, stamp and cigarette vending machines and money changers.

The development of the airplane industry carries with it a potential demand for steel wire although changes in design have eliminated part of the wire which at one time was used for bracing the wing and body structure. Much stream line cross section wire still is made for exposed airplane braces and demand for round and square wire for concealed braces is increasing. Airplane controls are usually tinned aircraft cord. Rust-resisting alloy steel cord and nonferrous cables of the bronze alloy variety are being used by some manufacturers. The demand for wire tie rods for bracing and for body construction is keeping some departments busy during this quiet season

Twisting steel strands into wire rope at the plant of the Wickwire Spencer Steel Co.

and engine builders continue to call for a substantial tonnage of high-grade wire for airplane engine parts.

The convenience of wire as a material for the fabrication of hundreds of small parts is well understood. Its use in place of sheets and plates increased by leaps and bounds at the time the electric spot welder was developed. Wire bathroom fixtures are an example of this. Formerly these were sheet stampings. Sidewalk grating now is made of strip steel and twisted wire joined by automatic spot welding. Rotary screens formerly made of perforated plates now are successfully made of spot welded wire.

Large automatic fabric welding machines take wire from coils and spot weld it into square mesh fabric in widths and mesh sizes as desired. This fabric has many uses, the principal one being for concrete reinforcing. More than 150,000 tons of wire are used each year for such reinforcing. This goes into roadways, sewer pipe, buildings and other concrete work. Screen cloth such as used for window screens takes from 20,000 to 25,000 tons of steel wire each year. Some other wire products are bird cages, lighting fixtures, small tools, instruments, toys, restaurant furniture, store fixtures and clothes hangers.

Cleanliness apparently pays in industry, for plants generally are getting cleaner and steel wire helps in the cleaning up process. Wire brushes are used for cleaning off old paint preparatory to repainting. Wire brooms are used for cleaning floors, especially concrete floors and even when the old familar straw and fiber brooms are used, a considerable amount of wire is called for in the binding of the bristles and the fastening of these to the broom handles. A recent report covering the cleaning operations at the Ford plant stated that a supply of 150 mop pails a day was required. These all have wire handles. In the same item the number of brooms worn out in a month by the cleaning department was placed at close to 1000. Swede shoes are cleaned with small wire brushes.

New Uses Develop

In the building hardware industry, wire is finding new applications. Door knob shafts in the past have been made of forgings, castings and stampings, but now these nearly are all made of square and round section wire. Wire is used for door hinge pins, for caster axles and shafts and for dozens of parts that enter into the mechanism of different styles of locks. A few years ago the high-grade locks had bronze and brass parts. Now some of the best locks made have alloy steel parts in place of the nonferrous material.

Automobile tow lines made of stranded wire were popular six or eight years ago when engine troubles were more frequent and the necessity for towing or being towed was a common experience. Stranded wire tow lines still are made in considerable quantities but the demand gradually is declining. However, stranded wire cable for bridge and building construction and for general use in industry enjoys a growing market or did until 1930. Wire rope is used in operating derricks in construction work, for cranes in factories, for hoists on ships and docks. It is used extensively in the lumber industry for snagging logs and for power transmission.

Ore from mines often is transported miles on overhead wire rope bucket conveyors. The mining industry in all branches, in fact, is an excellent customer of wire rope manu-

Courtesy Wickwire Spencer Steel Co.

Automatic electric welding machine for making fabric for concrete reinforcing

Pennsylvania Railroad Puts 150 New Electric Locomotives On Timken Bearings

150 of the electric locomotives to be built for the Pennsylvania Railroad's New York-Washington electrification project will be equipped with Timken Bearings on all driving wheels and engine truck axles.

90 of these locomotives will be of the P-5 class, 3,750 H.P., designed for a speed of 90 miles per hour in passenger service. The other 60 will be of the L-6 class, 2,500 H.P., for freight haulage.

The selection of Timken Bearings for this important new equipment foreshadows the universal use of anti-friction bearings on all types of locomotives and railway rolling stock.

This is the largest order for anti-friction bearings ever placed by any railroad at any one time. The Timken Roller Bearing Co., Canton, Ohio.

TIMKEN *Tapered Roller* **BEARINGS**

facturers. The huge gold dredges in Alaska use hundreds of tons of wire rope and mine hoists and mine tramways are nearly always steel cable operated. One of the most important uses of wire rope is for elevators in tall buildings. This is a rapidly growing field and one of surprising developments. It is said that the income from sightseers who go by elevator 1200 feet to the top of the Empire State building in New York covers all the elevator service expense of the entire building. Drilling for oil to the great depth now explored practically would be impossible without wire rope.

An example of a new use of wire cable is to be found in the Kill Van Kull bridge now nearing completion between New Jersey and Staten Island, N. Y. This is an unusually long steel arch bridge with the original design showing the roadway suspended from the arch by flat steel suspension members following previous practice in this particular feature. Some time after orders were placed engineers changed this design to use stranded wire rope suspension members in place of the flat steel stating that this would give greater flexibility.

(This is the first of a series of two articles. The final installment will appear in an early issue.)

Forges Exhaust Valve of Alloy Steel With Copper Cores for Cooling

COPPER-cooled valves in which copper is forged into the head and stem recently have been developed for use in heavy-duty and high-speed automobile engines as a means of meeting severe conditions imposed on engine parts with the increase of power output. These valves, brought out by Thompson Products Inc., Cleveland, are of interesting construction.

Development of valves has proceeded in two directions; first, through search for steels which are more heat resistant and, second, through improving the performance of existing steels with the use of coolants. To the latter end, the salt-sodium method, now employed extensively to cool aircraft and heavy-duty truck exhaust valves, was the only effective method until the perfection of copper cooling, which, it is claimed, has been demonstrated to give comparable performance and can be manufactured at a cost comparing with the usual solid-stem type.

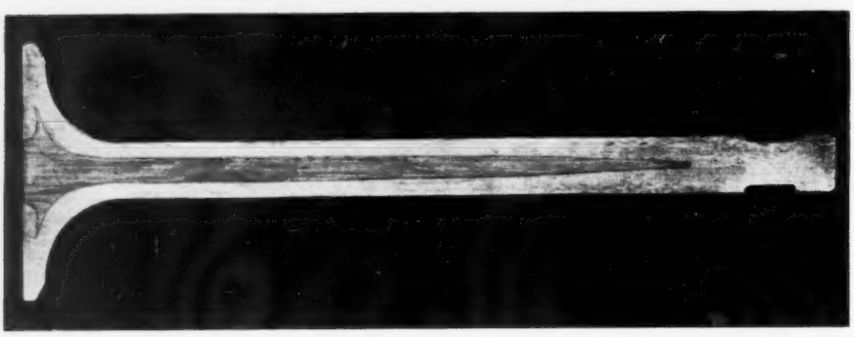
Copper cooling differs basically from other methods, as it depends on conduction rather than convection as the principle of functioning. Thermal conductivity properties of aluminum and copper are well known, and for many years efforts have been made to fill valves with these metals by drilling out the valve stem and pushing in rods of these materials. However, it was impossible to avoid air pockets, therefore, a good bond was not obtainable and conductivity was greatly diminished.

Copper Shape Affects Cooling

For the new valve, engineers of the Thompson company have been able to develop a unique method of forging copper symetrically into the valve stem and head. As shown in the accompanying illustration, copper is forced well out toward the seat of the valve, taking heat from the head, the cooling effect being governed to an extent by the shape of the section. The copper running down the stem always is exactly centered and with the exception of but a few steels, a perfect bond exists between the copper and steel after forging. In cases where no bond forms, the fit is so tight that conduction is little impaired.

While the heat conductivity of aluminum is slightly better than copper in the high ranges, improving as the temperature rises, that of copper remains almost constant and is much the better of the two in the low motor operating ranges. Alloying of steel seriously reduces its ability to conduct heat. Experimental determination shows that copper transmits heat 20 times better than chromium-nickel-silicon steel which the company uses for exhaust valves. This steel is corrosion resistant, has high strength at heat and will not harden. The steel is austenitic with chromium running from 11 to 15 per cent, nickel from 7 to 9 per cent and silicon from 2 to 3 per cent.

A valve stem with copper core 40 per cent of its diameter will transmit as much heat as a solid valve stem three times the size. Tests also show that copper-filled valves maintain head and stem alignment remarkably well. This is because the copper in the head allows central distribution of the heat minimizing the chance of warpage.



Longitudinal cross section view of chromium-nickel-silicon steel automobile engine exhaust valve with copper core forged into head and stem

New Zealand Is Importing More American Machinery

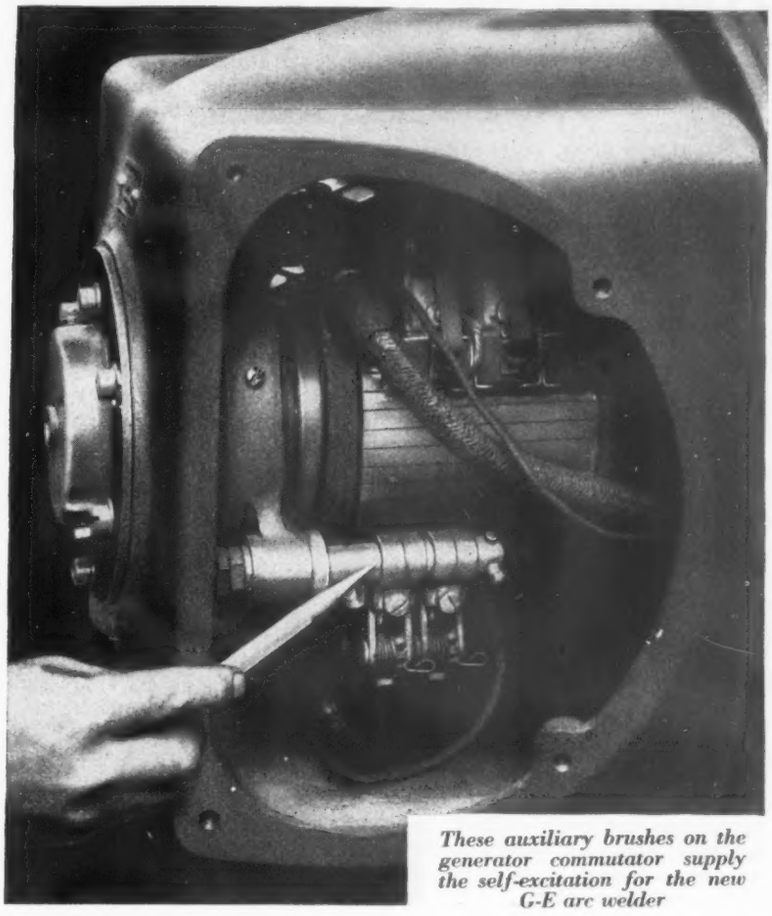
American industrial machinery has made rapid advances in New Zealand during the last few years, according to a report to the commerce department from Trade Commissioner Julian B. Foster.

Total imports of machinery into New Zealand in 1930 had a value in excess of $4,500,000 of which amount about $1,212,000 represented items from the United States. As might be expected, the United Kingdom is by far the largest supplier of machinery to New Zealand. This is readily understood in view of the fact that the population is almost solidly of British ancestry and that the United Kingdom enjoys tariff preferences ranging from 10 to 25 per cent in most lines of machinery.

Imports of dredging and excavating machinery registered the largest gain, rising from $125,000 in 1929 to $195,000 in 1930. The United States' share in this business amounted to 64 per cent and 59 per cent, respectively. Boring and well-drilling apparatus likewise showed a substantial increase, and again the proportion of American equipment involved amounted to more than half the total.

In his report, Trade Commissioner Foster emphasizes the fact that the labor-saving applicability of American machinery has been clearly recognized in New Zealand. In spite of the heavy tariff preference given the English manufacturers, he believes the United States will undoubtedly secure an increasingly important share of the total machinery trade of the Dominion.

SELF-EXCITATION and SPARK-FREE COMMUTATION



These auxiliary brushes on the generator commutator supply the self-excitation for the new G-E arc welder

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1. **Stable, flexible arc**
2. **Quick recovery ("pep")**
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4. **Spark-free commutation**
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10. **Low center of gravity**
11. **A definite purpose for every ounce of material**

SELF-EXCITATION has always been a fundamental engineering principle in the design of General Electric welding sets. By avoiding a separate exciter for the welding generator we save space and weight; avoid complication; and spare you the trouble of maintaining an extra unit.

Spark-free commutation, difficult to achieve in a welding generator, has been obtained in the new G-E welder at all loads. This means no damaging sparks at the brushes; no shortening of the life of the commutator due to pitted bars, burnt brushes, burnt insulation between bars.

Your electrician or maintenance man will appreciate these two features. He will also appreciate the standard driving motor and the accessible ball bearings.

Before buying any arc-welding set, investigate this advanced machine which bears the G-E monogram. Prompt shipment can be made from any of 20 G-E warehouses throughout the country. Ask your nearest G-E office.

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SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Unusual Skill Required in Making Large Forgings

LARGE forgings for guns, high-pressure steam drums, oil cracking and chemical stills, turbine disks, crankshafts and rotors frequently require the working of ingots weighing up to 485,000 pounds. Because relatively few plants are equipped to produce work of this class, any discussion of the operations always proves interesting.

The Hartford, Conn., chapter of the American Society for Steel Treating recently devoted one of its meetings to large forgings and presented as the speaker, J. R. Adams, superintendent, special products division, Midvale Co., Philadelphia, one of the leading manufacturers in this field. Although the speaker confined his remarks for the most part to actual forging operations, he discussed several points in steelmaking and ingot mold design which have been found necessary to overcome forging difficulties.

Limit to Hammer Forgings

Beginning with hammer forgings, Mr. Adams said that the size of a forging which can be worked effectively is limited because the sharp, instantaneous force applied by the hammer does not penetrate deeply enough to refine the structure at the center of large pieces. The larger the piece, the shorter will be the stroke of the hammer. However, if the forging is not too large and the power of the hammer is ample, good physical properties are to be obtained from hammer forgings. Before the advent of the press for forging, double-acting hammers as large as 125 tons had been used.

Thin disks of large diameter, such as steam turbine bucket wheels, are made readily under the hammer. A 25,000-pound disk 20 inches thick can be forged down under the hammer to 3 to 4 inches thick with ease. Forging thin disks requires great skill and the rythm of singing negro gangs handling disks as large as 26,000 pounds and 128 inches diameter is an interesting sight.

Die width is an important consideration. As a general rule, the die should not be as wide as the diameter of the forging for dies which are too wide prevent the work from drawing out properly by anchoring the surfaces in contact with the dies and setting up strains at the center from side breathing. Thin, hollow cylinders are made under the hammer by starting with a mandrel through a small hole in the forging, expanding the hole to the required diameter by blows on the periphery, and then drawing to the required length on a larger mandrel and with V-shaped dies. These dies of 95 to 110-degree included angle have a distinct advantage over other types of dies in that they support and consolidate the center of the forging.

In making round forgings under the hammer on flat dies, it is best to cog the metal down in the form of a square to near the finished diameter, then form a rough octagon, and finish on V dies. Half-round swage dies may be used for light reductions, but are limited because of the danger of bursting the center of the forging.

Most large forgings are made under the hydraulic forging press, as the slow application of force enables a small press to make forgings of a size that would require an enormous hammer, furthermore, the center of a large forging is worked better by a press than by a hammer. Octagon ingots of 108 inches diameter and weighing 485,000 pounds are being cast and forged successfully under the press and rectangular ingots of the same weight can be handled.

Press Performs Many Operations

Although the press is not adapted to form thin upset disks readily, it is admirable for upsetting, punching, and trephining unusually large pieces and is a better tool than the hammer for drawing long drums. The press can be used for expanding in much the same manner as the hammer. In many hollow-drawn type forgings such as oil cracking stills and high-pressure steam drums which are to have the heads closed to a smaller diameter hole, the end of the forging in some cases is left thick after the drawing operation.

Forgings which are to have great differences in diameter in adjacent portions are V-tooled to a depth of usually not more than 6 inches and then set-down by means of a V die, a large fillet being allowed. Large set-downs must be done slowly and carefully to avoid rupture.

As the forger can not entirely correct casting defects, great care must be taken in the design of ingot molds and in controlling and pouring of the metal to eliminate shrinkage cavities and blowholes. An ingot mold which produces commercially sound ingots from one class of steel may give poor results from steel of another composition. Large ingots should be stripped while still hot and allowed to cool slowly through their critical range and then be reheated for forging.

If the ingots are to be stored, it is advisable to break up the coarse crystalline structure by a small amount of rough work and then to give them an annealing treament. A 63-inch octagon ingot would be brought to the forging temperature in not less than 60 hours and then soaked for 24 hours before forging. Longer time would be allowed for alloy ingots or compositions that are tender and difficult to forge.

Need Low Finishing Temperature

The finishing temperature of forging should be as low as practicable for high physical properties are difficult to obtain through subsequent heat treatment if the finishing temperatures were too high. Larger allowances for finish machining are required by press forgings than for hammer forgings because the former method, lacking the impact effect for removing scale, may press the scale into the forging.

Experience has led to the practice of continuously rotating a long forging while it is being reduced rather than to forge from end to end without rotating. The Midvale company has developed a manipulator, similar in action to an open-hearth charging machine, by which the forging can be rotated quickly as well as fed forward longitudinally.

Among the interesting forgings mentioned were a single-throw crankshaft weighing 90,000 pounds, 16-inch naval guns 960 inches long heated in a vertical furnace and quenched in water, and steel rolls weighing 72,000 pounds and having a scleroscopic hardness of 87 to 91.

Piercing presses are employed to make squirted forgings such as shells and thin wall cylinders and at present it is possible to make rather large extruded forgings, running in length up to 10 feet.

Reinforcing Bar Institute To Give Lectures

Directors of the Concrete Reinforcing Steel institute, Chicago, have recommended that promotional meetings of architects, engineers and selected contractors be organized by members of the institute in a number of the leading building and industrial centers.

At these meetings, which will start early next month, R. W. Johnson, engineer for the institute, will give a brief resume of desirable qualities of reinforced concrete in construction of structural frames of buildings. The lectures will be illustrated with slides and copies of the bulletin recently issued by the institute on "Tall Building Economy."

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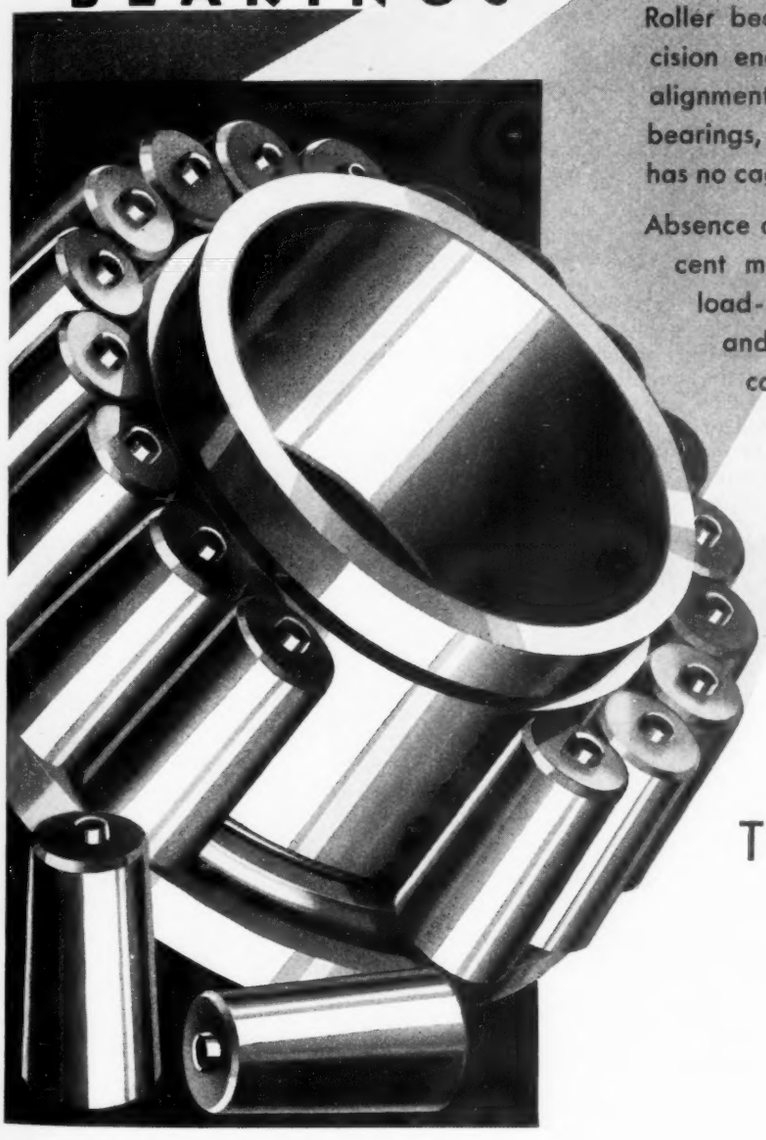
Tyson's double-ribbed backplate, with double bearing for the thrust end of each tapered roller, gives inherent alignment and enduring precision never before possible in anti-friction bearings.

Exact and positive alignment, both lateral and vertical, of every roller, is based on a simple mechanical principle that is perfectly obvious. Look at the picture.

The double-ribbed backplate, an exclusive Tyson feature, aligns the rolls and makes possible the omission of the conventional cage or retaining ring.

Roller bearing life endures only as long as precision endures. Precision lasts as long as perfect alignment is maintained. Perfect alignment, in caged bearings, must end when the cage wears. But Tyson has no cage.

Absence of the cage makes room for 30 to 50 per cent more rollers, with corresponding greater load-carrying capacity. Absence of the cage, and its heating friction, allows Tyson to run cool under full load at unprecedented high speeds. The accuracy of machine work and materials used in Tyson-quality bearings need no comment. They are interchangeable with all standard size ball and roller bearings.



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Air-Gas Proportioners Serve Bolt and Rivet Furnaces

BY F. J. EVANS

President, F. J. Evans Engineering Co.

BOLTS, rivets and nuts in small sizes are pressed or hammered from steel rods. For the larger sizes, however, the stock first must be heated to forging temperature in furnaces provided for this purpose. The furnaces usually are of special design to afford correct heat application and thorough penetration, and economic operation.

While the mechanical phase of bolt and rivet manufacture is well standardized, there are many varied types and designs of furnaces. Several interesting types are a part of the equipment of the Vulcan Rivet Corp., Terrant City, Ala. This concern makes rivets, ranging from ⅛ to 2 inches, bolts and nuts from 3/16 to 2 inches, and railroad spikes from 5/16 to 9/16-inch. Rivets, nuts and bolts are cold pressed up to ¼-inch, and hot forged above that size, while the entire range of spikes is made by the hot process.

The raw material is principally high and low-carbon steel rods, in the form of coils, and these are pickled prior to drawing. A slight reduction amounting to 0.150-inch is given the rods in the drawing room to correct any defects and to make them uniform throughout.

Smaller sized rods intended for bolts are trucked to the cold headers where they are given round, square, flat, cone or hexagon shapes as the case may be. The headers are of the conventional type; two dies move back and forth in a heavy steel frame. The rod is fed automatically through a stationary die, the first moving die spreading out the end and the second finishing the head. A tool then cuts off the bolt at the right length. Another type has two dies in tandem on the stationary end, the second being moved just enough, by cam, to shear off the bolt, after the head has been formed. These machines will produce from 35,000 to 40,000 per day.

Annealed in Gas Furnace

The bolts and rivets are annealed in a gas-fired cylindrical furnace 6 feet long and 3 feet diameter. This furnace consists of a steel shell in which revolves a steel retort, lined with refractories, which is heated by two rows of eight gas burners each. The retort is hopper fed, the amount of material passing through, being regulated by a dipper which is affixed to the charging end of the retort and revolves with it. At each revolution this dipper automatically fills itself with material and charges it into the retort, where it works through by the combined action of gravity and rotation.

The work is heated to 1600 degrees Fahr. for about 10 minutes. The rivets are discharged into steel pots, covered and cooled slowly. Bolts are cooled in the air and after being finished, are reheated to 1000 degrees Fahr. and quenched in oil, to blacken. The quench is contained in a steel tank equipped with a rotating perforated steel screen with a screw on the inside. As this screen sets at an angle, the bolts are passed up and out of the tank after being quenched.

Trimmed in Automatic Machines

The trimming division consists of rows of automatic machines for trimming the heads of various shapes. There are various types of machines and several unique feeding devices, and all are motor driven. The work is tumbled in barrels. The machines in the pointing division are driven mechanically, but the work mostly is chucked by hand. The bolts then are routed to the threading machines where the threads are rolled on.

Flat rods in coils form the stock for the nuts and are fed into a machine with two punches and two dies, the first punching the hole; the second forming the crown and shearing off. These are tapped in automatic hopper fed machines of the chuck and spindle type. The bolts and nuts are assembled on benches and then are sent to the shipping department.

How Spikes Are Formed

All of the stock for the hot forging process is heated in forging furnaces that were designed and installed by the Surface Combustion Corp., Toledo, O. Straight rods are used for spikes, the hot stock being taken from the furnace and pushed into a machine with a roll feed which points and cuts off. A gripper then holds the sheared stock while a hammer head and dies bump against it and form the head, in a single stroke. The finished spike then is released and drops into a tote box. This machine will produce 25,000 spikes daily.

The furnace is built of brick, steel encased and is 34 x 5 x 3 feet. It is heated with 10 gas burners on each side or 20 in all. All burners are used in the morning to more quickly bring the furnace up to heat, but after that, only a part of them is required to maintain the proper forging temperature. High-pressure gas is used together with an automatic proportioning device by which the desired ratio of gas and air is obtained. As a reducing atmosphere is required in the furnace, the burners are set for this, and thereafter automatically maintain the correct ratio, regardless of the flow of gas or the variations in the volume of work passing through the furnace. The finished spikes are weighed, sorted into kegs and trucked to the storage room.

Another set-up is provided for the large sizes of spikes, the furnace be-

Rod end heating forge which serves hand-feed bolt machine

INTO STEEL THOSE *DESIRABLE "Things That Can't Be Done"*

Translating into steel a new type of Reheater Shell, designed by Foster-Wheeler Corporation—naturally led to the selection of SMITHWelding as the fabricating process. Decided innovations were required, difficult in the extreme by any other process. For SMITH-Welding they represented simply the application of practices previously developed by A. O. Smith Engineers.

Six of these Reheater Shells have been made to date, two for erection in the new Ford Station and four for Houston Lighting & Power Co.

Freedom from limitation of design, with SMITHWelding, permits the rapid application of advance in design for high pressure steam systems.

Because SMITHWelding can do so many things, it greatly reduces the things that could not be done due to the limitations of other fabrication processes.

A. O. SMITH CORPORATION
General Offices: Milwaukee, Wisconsin
PRESSURE VESSEL DIVISION

PRESSURE VESSELS

OPERATING PRESSURES UP TO 5000 POUNDS

ing of brick steel encased and 7 x 6 x 4 feet. The unit is heated with two gas burners on each side or four in all. All burners on these furnaces are of the high-pressure velocity type and are equipped with the venturi type gas-air proportioners. The capacity of this furnace is 60 rods which are removed, one at a time, and pushed into the spikemaking machine by hand. The finished spikes drop onto a conveyor which dumps them on steel pots for slow cooling. This is the only heat treatment the spikes receive.

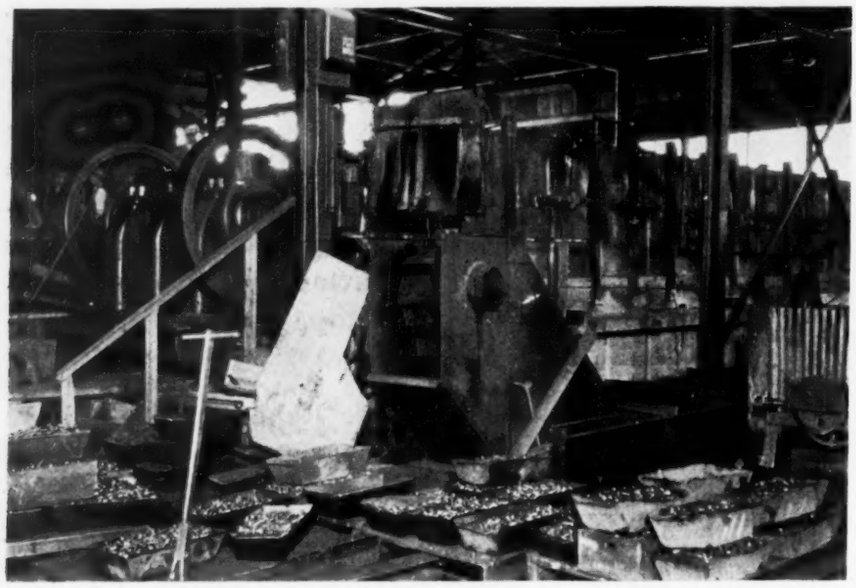
Kegs Handled on Skids

Two bolt and rivet furnaces and machines are operated which are almost identical with the one just described. The hot rivets are dumped by conveyor into pots and then sorted and kegged directly on scales. These kegs are put on skids and moved to storage by gasoline-driven high-lift trucks. The latter are used throughout the plant. The bolts, however, are routed to automatic, hopper-fed trimming machines, where the flash is trimmed in a punch and die. They are then tumbled, pointed and threaded, the threads being cut in special machines instead of being rolled.

A different method is used in forging bolts of 6 inches and longer and consists of first cutting blanks of the correct length from the rods. These are heated in a slot-type forge, 5 feet wide and 2 feet square in cross section, which sets on legs. The unit is heated with three gas burners, set just below the slot. This slot extends across the entire face and is just wide enough to permit the blanks to pass. Only one end of the blanks protrude into the heating chamber, as only about 2 inches of the stock is heated. A boy manipulates the stock in the furnace and hands the hot blanks to the machine operator as needed. The operator feeds the hot end into the header, which forms the head with a double die, as explained earlier in this article. The bolts then pass through the other machines as described.

Knuckle pins are given a special heat treatment in a brick furnace of unique design. The hearth slopes at a 10 degree angle and is equipped with alloy rails on which the work slides by gravity from one end to the other. Four gas burners are installed on each side, or eight in all, and a temperature of about 1450 degrees Fahr. is maintained in the furnace. The pins are discharged into an oil quench provided with an elevator conveyor which moves them through the tank at the rate of 4 feet per minute, and discharges them into tote boxes.

All furnaces are equipped with thermocouples which are connected with indicating pyrometers through multiple-point switch-boards. A complete machine shop for making tools, dies, jigs, etc., is maintained and the heat treating room of this shop is equipped with several standard gas furnaces of the Surface Combustion type. Gas is used at 15 pounds per square inch and a compressor is employed to obtain this pressure.



Rod heating furnace which serves continuous rivet machine

To Hold Patent Exhibit

The second International Patent Exhibition will be held at the Merchandise Mart, Chicago, Sept. 14 to 27. The exhibition includes a diversified display of new inventions and patents and a showing of some of the new products of many leading manufacturers. Maj. Gen. George O. Squier, inventor of the liberty engine and numerous other inventions, is honorary chairman of the exposition. B. Hamilton Edison is managing director.

Standards for Galvanized Sheets Given Approval

Tentative standard specifications for galvanized sheets of bessemer and open-hearth steel and open-hearth iron have just been approved by the American Standards association. Five classes of zinc coatings, applied by the hot-dip process, are covered in the specifications as follows:

Class A—extra heavily coated sheets which are not intended to be formed other than by corrugating; class B—heavily coated sheets which are not intended to be formed other than by corrugating and curving to large radii; class C—moderately heavily coated sheets for moderate bending; class D—ordinary coated sheets for general utility; class E—sheets having lighter, more tightly adherent coatings to reduce liability of flaking in severe forming.

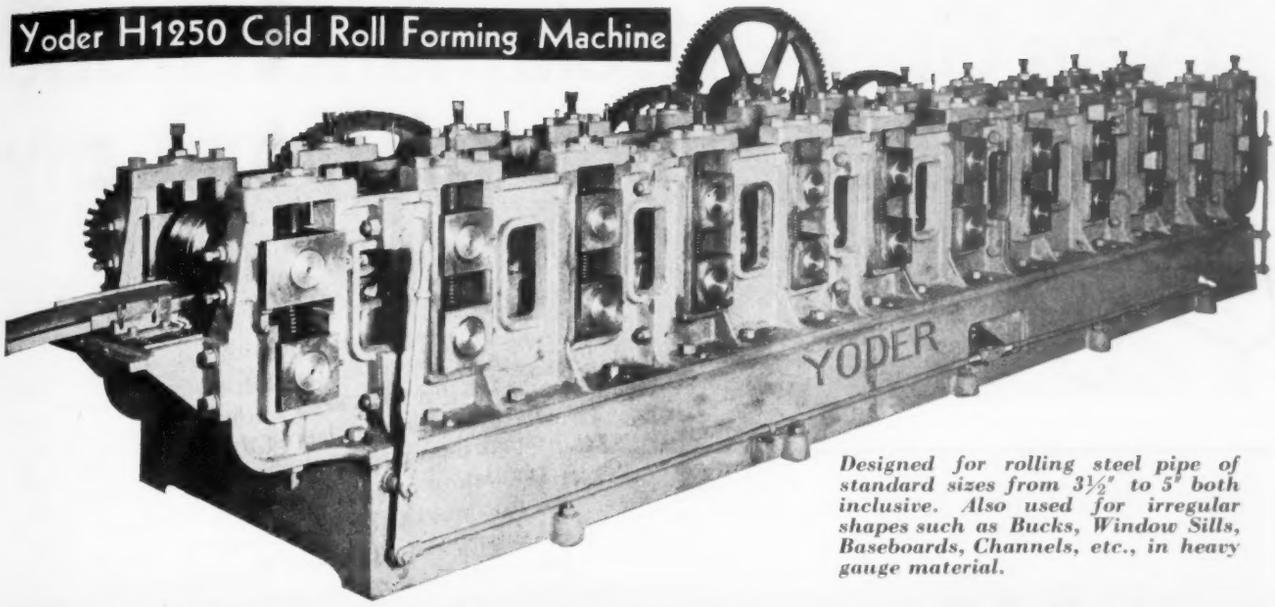
Class D coatings approximate those of class C except in medium gages in which coatings of class D are appreciably lighter. Class D represents material generally available in warehouse stocks which is not intended for use where relatively long life, represented by classes A, B and C, or severe forming, represented by class E, is required.

The standard includes sections dealing with chemical properties and tests, physical properties and tests, base metal tests, coating tests, permissible variations, finish, marking, and inspection and rejection. Provisions for minimum requirements when copper is used in the base metal requirements for weight of the zinc coating including a table of weight of coatings by ounces per square foot, provisions for base metal tests, coating tests, weight tests and a table showing gage range and permissible tolerances in weights of sheets in percentage of theoretical weight constitutes other text matter.

The standard was submitted to the American Standards association by the American Society for Testing Materials, sponsor for the project. J. A. Capp, General Electric Co., New York, is chairman of the sectional committee on specifications for zinc coating of iron and steel, and A. B. Campbell, National Electric Light association, New York, is secretary.

Copies of the standard can be obtained from the American Standards association, 29 West Thirty-ninth street, New York, for 25 cents each.

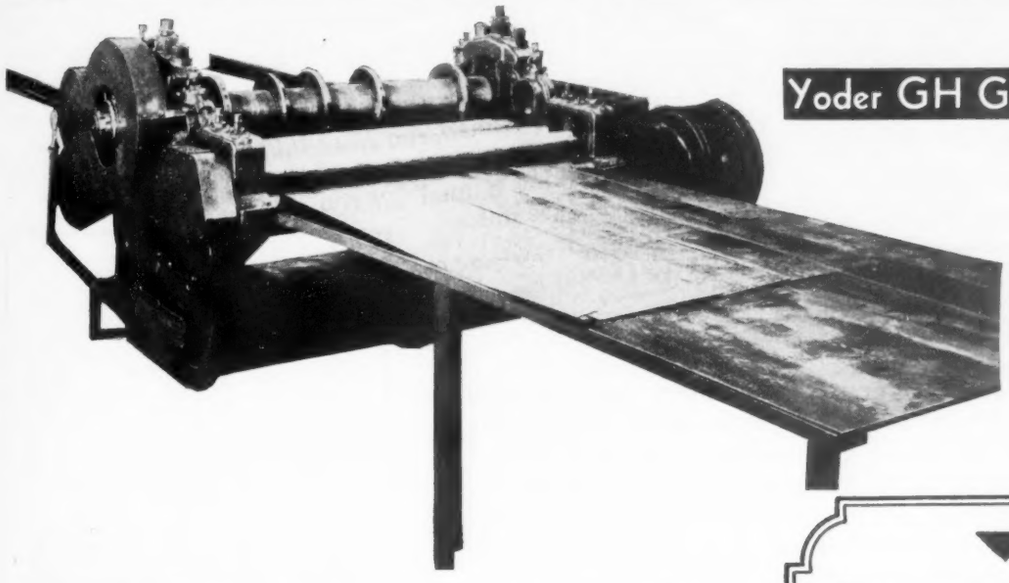
Yoder H1250 Cold Roll Forming Machine



Designed for rolling steel pipe of standard sizes from 3½" to 5" both inclusive. Also used for irregular shapes such as Bucks, Window Sills, Baseboards, Channels, etc., in heavy gauge material.

PLATE AND SHEET WORKING MACHINES

Yoder GH Gang Slitting Shear



Made in sizes from 24" to 72". Capacity of 48" Shear 7 cuts ¼" or 4 cuts ⅜" steel. Capacity 72" Shear, 2 cuts ⅜" steel.

YODER pipe forming equipment handles all sizes from ⅛ inch to 36 inches diameter, and wall thickness from tin plate to ¾ inch. The GIANT PIPE MACHINE has a capacity for forming 100 feet of 30 inch pipe—¾ inch wall thickness—per minute, and produces seams suitable for welding.

Yoder mills are backed by over 20 years experience in developing Cold Roll Forming Machines.

Designed and Built by YODER

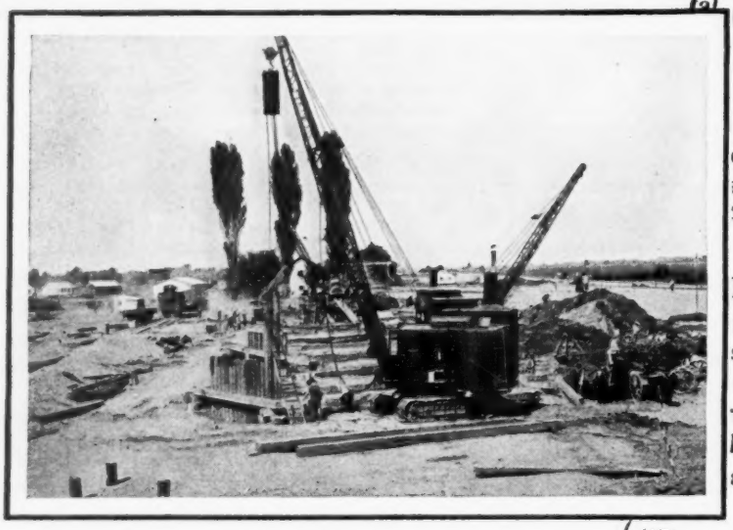
Builders of

Gang Slitting Shears
Rotary Shears
Automobile Sheet Metal Forming Machines
Pipe Forming Machines

Consult our engineers on your sheet or plate problems

THE YODER COMPANY
W. 55 ST. and WALWORTH AVE. CLEVELAND, OHIO
PLATE AND SHEET METAL MACHINERY SPECIALISTS

4 on Greek Reclamation Work for The Foundation Company



Salonika Plains Reclamation

The work entrusted to The Foundation Company, New York, by the Greek Government for the reclamation of the vast area known as the Salonika Plain consists of the design and construction of flood protection works, regulation of rivers, drainage and irrigation works and reclamation of Lakes Ardzan, Amatova and Yenitza within the area west of the town of Salonika defined by the 50-meter contour lines, and traversed by the Rivers Galikos, Axios, Loudias and Aliakmon.

The total area of this plain is some 00 square miles, or 512,000 acres. Of is area, when the works now in prog- ss are completed, 178,000 acres will reclaimed, and an additional 148,000 es protected from periodical floods, king a total 326,000 acres are miles.

Reprinted from "The Near East and India"

Reclaiming 178,000 acres of swamp land in the Salonika Plain is the gigantic task which has been entrusted to The Foundation Company by the Greek Government. This project, involving an expenditure of many millions, will require several years to complete and includes changing the courses of two rivers, the reclamation of three lakes and extensive flood protection and irrigation work.

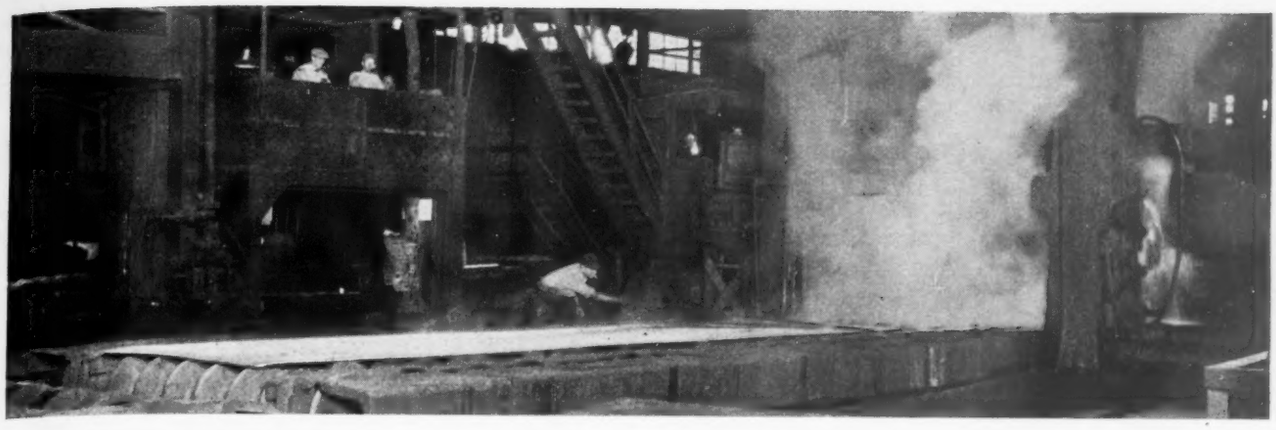
Obviously, the choice of dependable equipment is essential to The Foundation Company on this far-away job. But it is just as true that the daily performance of your cranes right around town means the difference between profit and loss on a contract. That is why the country's leading engineers and contractors rely on Industrial Brownhoist crawler and locomotive cranes to do their work.

The two views above show Industrial Brownhoist steam crawler cranes driving piles on the plains of Salonika. These cranes, equipped with extra large boilers, are part of a fleet of ten Industrial Brownhoists purchased by The Foundation Company.

Industrial Brownhoist Corporation, General Offices, Cleveland, Ohio

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco, Cleveland.

INDUSTRIAL BROWNHOIST



PROGRESS IN STEELMAKING

PHOTOELECTRIC tubes, which are controlling various manipulations in rolling practice, are now in successful operation on a pipe facing machine in a large tube mill. Each machine has two movable cutting heads. When a length of pipe is clamped in position, these two heads must advance to within ¼-inch of the pipe and stop there. The heads are motor driven. A photoelectric tube and a light source are mounted on each cutting head in such a way that as the head approaches the pipe, the end of the pipe intercepts the beam of light between the source and tube. Shutting off the light de-energizes the tube, which in turn causes the control equipment to stop the travel motor, when the head is ¼-inch from the pipe.

IF AN addition of high-silicon spiegel is made to basic open-hearth heats, according to metallurgists of the bureau of mines experiment station, Pittsburgh, the metal may be tapped within 10 to 15 minutes, and a well deoxidized and relatively clean steel results.

* * *

In a 10-inch continuous bar mill recently completed in Ohio the practice of gearing the rolls from a common line shaft has been avoided and yet the speed relations can be maintained as precisely as though this practice had been followed. The ratios of the speeds of the 10 motors driving the various stands are maintained by synchronous regulating devices which also permit the speed relation to be changed at will to accommodate the varying requirements of different orders.

AN ALLOY steel plant last year installed an electric heat treatment furnace. Up to that time the company had been retreating more than half of the product. Due to ease of maintaining automatic control in the electric furnace, not a single lot of steel going through this unit has had to be retreated.

* * *

Blast furnacemen frequently resort to the oxygen burner when a hard skull is encountered in the iron notch. A successful method employed at an Ohio stack for igniting the oxygen involves what is known in furnace parlance as a "tar ball." Aluminum powder and iron filings or drillings obtained from the chemical laboratory are mixed with tar, made into small balls and wrapped in paper. After as much clay as possible is removed from the notch by means of an air drill and scraper a tar ball is pushed against the hot skull and the oxygen applied direct from a cylinder and through a ⅛-inch pipe. The paper immediately takes fire aided by the aluminum powder, the tar maintains the flame and the iron filings provide a bath of metal to assist the oxygen in taking hold of the skull.

* * *

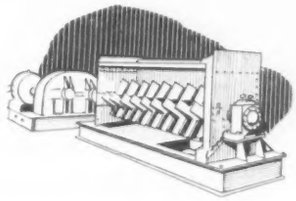
In direct contrast to the old idea that the heavier the zinc coating, the more resistant it would be to corrosion, it has been found that the condition of the zinc bath and the manner in which the coating is applied is more important. Many pipemakers who in the past have handled large pipe tonnages in bulk by dipping in the zinc bath, now are handling one or two lengths at a time, and wiping them with compressed air or steam.

* * *

An authority on wiremaking conservatively estimates that 70 per cent of the net cost of converting rods to wire is labor and about 100 per cent of the labor thus involved is handling.

* * *

A pipe plant has simplified the problem of disposing of cobbles and pipe ends. It has a large machine which shears and crushes this scrap simultaneously and drops it into charging boxes.



AT A SINTERING plant of a large steel corporation considerable difficulty was encountered in pugging the abrasive raw materials which it ran through its machine including iron ore concentrates, flue dust and sintered fines. In a new type pug mill, which it recently installed, paddles shaped from heavy angles, treated to withstand severe abrasion and mounted on an alloy steel shaft execute the pugging of a mixture of 50 per cent ore concentrates, 25 per cent flue dust and 25 per cent sinter fines weighing about 145 pounds per cubic foot with 5 per cent moisture. From 200 to 300 tons is pugged hourly.

Production Figures Improve *when* MORSE Tools do the Cutting

The Morse Line includes High Speed and Carbon

- DRILLS
- REAMERS
- CUTTERS
- TAPS AND DIES
- SCREW PLATES
- ARBORS
- CHUCKS
- COUNTERBORES
- MANDRELS
- TAPER PINS
- SOCKETS
- SLEEVES

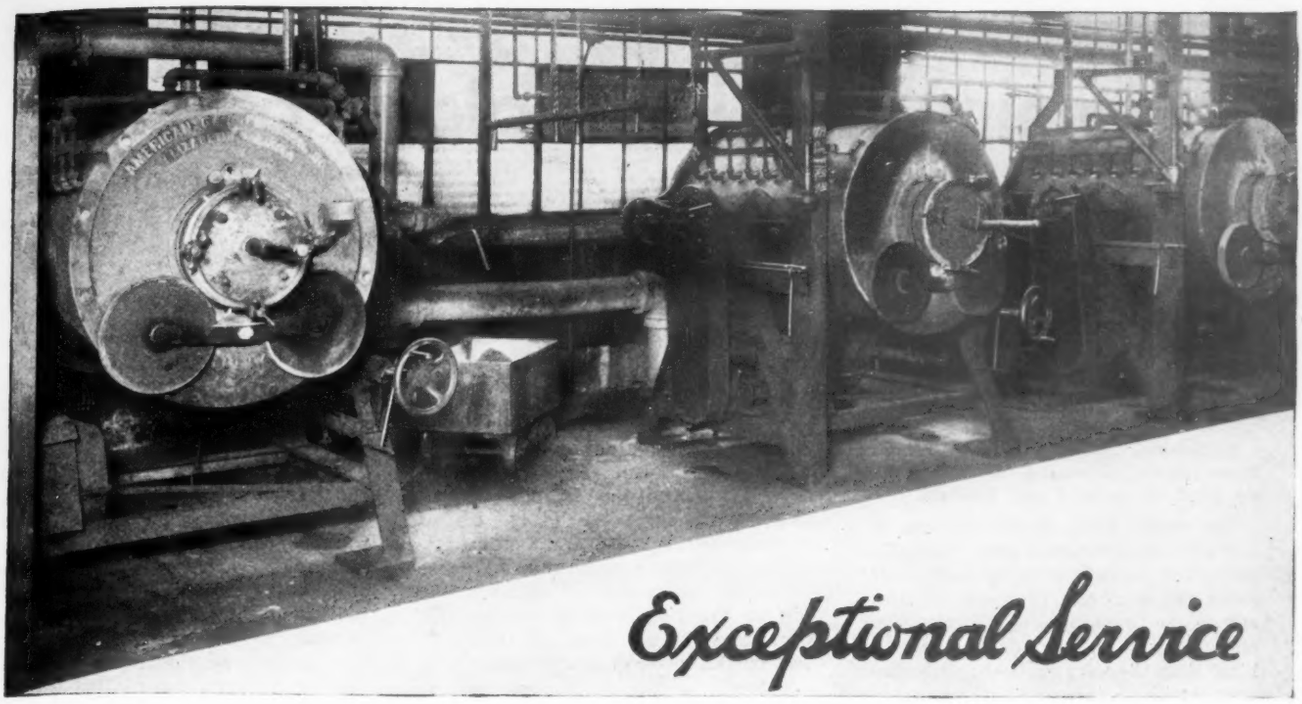
PRODUCTION figures cannot help showing a change for the better when the cutting tools last longer between sharpenings as MORSE tools do.

Careful accounting in thousands of plants has given MORSE Tools full credit for reduced production cost and increased production output.

MORSE

TWIST DRILL & MACHINE COMPANY

NEW BEDFORD, MASS., U.S.A.



Exceptional Service

Here are 3 retorts which have given exceptional retort service—10,000 to 11,000 hours in American Gas Furnaces. These retorts are being used in the plant of a large chain manufacturer and are still going strong after 10,000 to 11,000 hours.

Have you investigated the many interesting results accomplished by cast or sheet "Nichrome?"

Why not let us show you how "Nichrome" can be as profitable under your operating conditions as it is under the widely varying operating conditions of hundreds of other plants.

Retorts

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—the original heat-resisting alloy

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Hot Blast Cupola

Utilization of waste heat in hot blast cupola, discussed in The Foundry, Sept. 1, p. 71, 2 pp., 1 illust.

The waste gases drawn off just below the charging door pass through a row of surrounding ports into a circular gas duct and then are led to a refractory furnace, where in the presence of sufficient air bled from the blast line, they are ignited and burned completely to increase their temperature to the maximum. From the furnace, the completely burned gases pass into a preheater, therein transfer most of their sensible heat to the blast, and then are discharged into a small supplementary stack. The whole gas system from the hot-gas takeoff at the cupola to the auxiliary stack, is kept under suction by an induced draft fan discharging to the atmosphere. The system increases the capacity of the cupola 10 per cent and affords a saving of 25 per cent in the fuel consumption. The author presents a diagram showing the arrangement for waste heat recovery.

—STEEL, 9-10-31

Stoker Operation

Selection of proper size and type of unit and factors in their successful operation, discussed in Power, Aug. 25, p. 264, 2 pp., 2 illusts.

One of the chief operating difficulties common to all types of stokers is that of maintaining a uniform fuel bed over the entire grate surface. The problem is minimized through proper preparation of the coal before passing to the stoker hopper and guarding against segregation in the stoker hopper. The best size of coal is that having the largest percentage crushed to pass through a ¾-inch round mesh screen, with the maximum size passing through a 1½-inch round mesh screen. A thick fire and slow speed may give slightly better results than a thin fire and high speed, but greater burning of the grate is likely to occur. Generally the wind box pressure should be decreased gradually from the second compartment to the rear air compartment. While the fuel bed of an underfeed stoker must be much heavier than that of any other types both capacity and efficiency are decreased by carrying too heavy a fire. When putting a stoker into service after a general overhaul it should be operated for a short time at slow speed, then at full speed with maximum stroke on the secondary rams and other reciprocating parts. Use of water-cooled furnace walls and preheated air have considerable influence on stoker maintenance. Water cooling of the rear wall is particularly advantageous, owing to the cooling effect on the lower end of the stoker.

—STEEL, 9-10-31

Bearing Lubrication

Results of extensive tests conducted on ball and roller bearings to determine the proper lubricants and methods of application according to operating conditions, discussed by H. E. Brunner, in Machinery, September 1931, p. 30, 3 pp., 1 illust., 3 tables.

The lubricant must be free from corrosive agents and must serve to protect the bearing from corrosion as well as wear. Mineral oil of proper physical and chemical properties is an ideal lubricant for ball and roller bearings when the housing is designed to control the quantity entering the bearing and to prevent leakage and protect the bearing from the entrance of foreign matter. A hard grease has a tendency to channel and stand off from the rotating elements and must be used with caution. When a bearing is run under high temperature conditions, a heavier oil should be used than when the same bearing runs at low temperatures. In no case does a ball or roller bearing require a large quantity of lubricant. If grease is used, the housing should not be kept more than one-fourth or one-half full of lubricant. Oil generally is recommended for spherical roller bearings.

Wrought and Cast Steels

Comparative properties of these grades of steels, discussed in Research Group News (Electric Steel Founders' Research Group), July 1931, p. 406, 5 pp., 4 illusts.

There are many conditions of service where the maximum degree of ductility capable of being produced in steel, as by hot working and subsequent heat treatment, is not only superfluous but is detrimental, in comparison with the behavior of the same material that has not been hot worked but has been heat treated suitably. In the past some have believed that it was desirable to develop in almost every steel part, the maximum degree of ductility that could be produced, as indicated by the percentages of elongation and reduction of area in the tensile test, for the most satisfactory behavior in service. That theory has been proven to be erroneous. And it is the judgment of the best metallurgists that one should develop by chemical composition and heat treatment, that peculiar combination of physical properties which is best adapted for the individual part in service. The adaptation of the material, either cast or forged or rolled, to the job in hand, should regulate the degree of ductility aimed for. It is the structural ductility of the forging that results in its high ductility and not the ductility which is responsible for shortened life under high temperature, erosive, abrasive, and certain other conditions.

—STEEL, 9-10-31

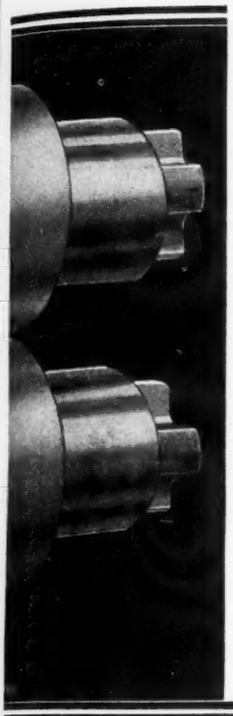
Passivity of 18-8 Alloy

Production of passivity by chromic acid on chrome-nickel alloy, discussed by C. G. Fink and F. J. Kenny, in preprint paper 60-17, Electrochemical Society, New York, 31 pp., 3 illusts, 13 tables.

The value of the anodic treatment in preventing corrosion by local action and pitting has been demonstrated. The greater increase of corrosion resistance toward ferric chloride, of anodically treated samples as compared with samples treated without current is, in part, a direct result of the selective loss in weight during treatment of the anodically treated samples. The experimental results thus far obtained show that much of the increase in corrosion resistance of 18-8 chromium nickel alloy, brought about by anodic treatment in chromic acid, is due to an equipotentializing of the metal surface. This principle may be of general application to other metals and alloys, no metal or alloy being corrosion proof without the elimination from its surface of point to point galvanic couples.

—STEEL, 9-10-31

THE ROLLS *with the* GREEN WABBLERS



The great strength, uniform structure and unequalled wear resisting qualities of Unefco rolls have made them the outstanding choice of the rolling mill industry for practically every type of mill.

They have proven their tonnage production is second to none, they are surviving in service where others have failed, and are making possible some of the recent World Record Rolling Schedules. Be sure of the best. Specify Unefco, "The Rolls with the Green Wabblers."

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ENGINEERING & FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Hydraulic Flanging Press Is of 1000-Ton Capacity

Lake Erie Engineering Corp., Kenmore station, Buffalo, recently has completed a 1000-ton four column flanging press of hydraulic type. This massive machine has been built for one of the well known plate working companies and will be used for general flanging and dishing. Exceptionally large adjustable clearance between platens has been provided in order to carry out various bending and forming operations required in connection with the work for which the press primarily is designed. The press is shown in the accompanying illustration, its size being apparent by comparison with the men standing on and around it.

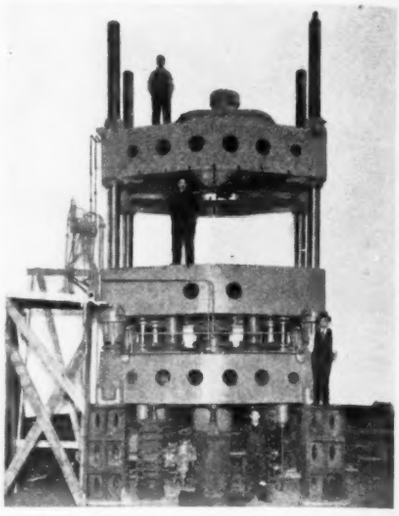
It is equipped with one central main ram 28 inches in diameter, two side rams 16 inches in diameter, one centrally located clamping ram 16 inches in diameter, and one 16 x 14-inch double-acting ram in top platen adjustable up to 18 inches off center. In addition, the press has four 8-inch clamping rams adjustable in and out from the center to take care of various diameters of heats up to maximum capacity.

These clamping rams operate through slots in the moving platen and enable the press to be used for deep drawing in one operation, the clamping ring serving to smooth out all wrinkles. Four 7-inch jack rams bring the platen up to the work at a speed of about 60 feet per minute, the main cylinders being prefilled from a slack water filling tank during this portion of the stroke.

Control valves are of forged steel with stainless steel stems and monel metal sleeves. The valve arrangement is such that by simple setting of the lever of the distributing valve, three different tonnages can be applied, these pressures being respectively 330, 660 and 1000 tons.

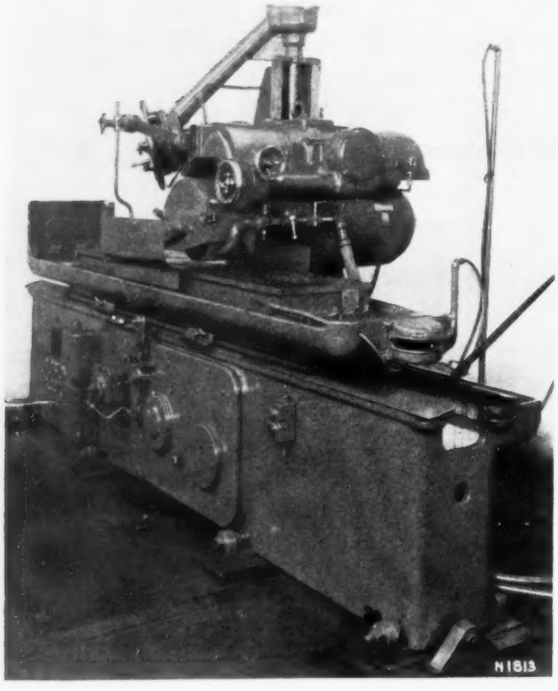
Principal Dimensions

The press has 12 feet 6 inches of clearance between its tie rods. The opening between its platens ranges from 6 feet minimum to 12 feet 6 inches maximum. Platen dimensions are approximately 12 x 16 feet. Floor space of about 12 x 18 feet is occupied by the machine when installed. The press has a total height of 32 feet, of which 17 feet stand above the floor line when the press is permanently located. The photograph used herewith was taken on the erecting and testing floor and therefore shows the entire mechanism, the lower 15 feet of which ordinarily would be hidden in a pit below the floor.



Powerful hydraulic press built by Lake Erie Engineering Corp.

This press, which is designed especially to withstand the unusually high speeds and heavy pressures attainable, has a total weight of approximately 180 tons.



HIGH production open side surface grinder developed by Norton Co. for performing precision work up to 15 x 15 inches. Built-in, direct motor drive is featured, a standard motor field being pressed into a cylindrical extension on the rear of the wheel slide, while within this runs a standard rotor which is pressed on the wheel spindle

Open Side Surface Grinder Has Built-in Motor

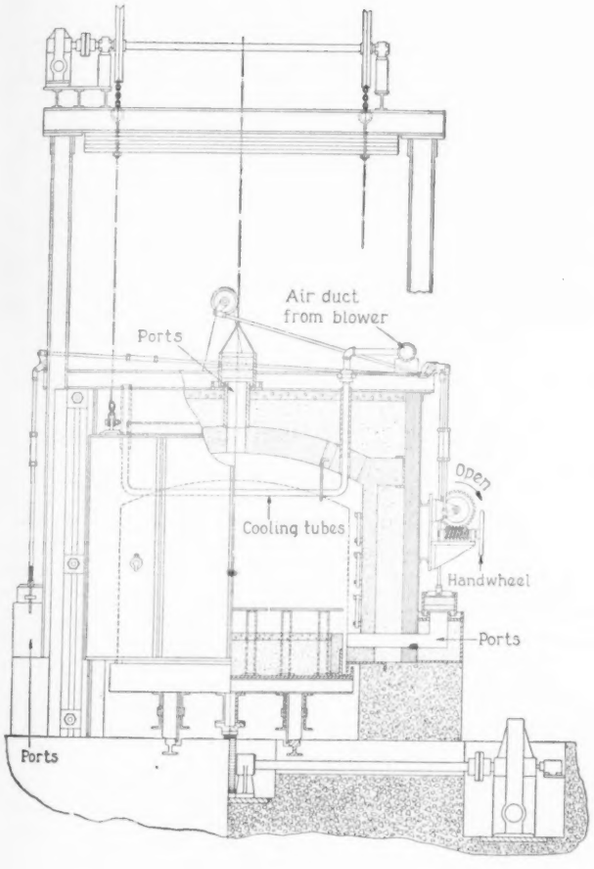
Norton Co., Worcester, Mass., has brought out an improved model open side surface grinding machine of 15 x 15-inch capacity. This is shown in the accompanying illustration.

The principal improvement is in the design of the grinding wheel slide, the rear of which is cylindrical and bored to receive a standard motor field, this field being pressed in place therein. The wheel spindle in turn carries a standard rotor which runs within the stator with proper clearance between.

Bearings of the wheel spindle are

Modernize

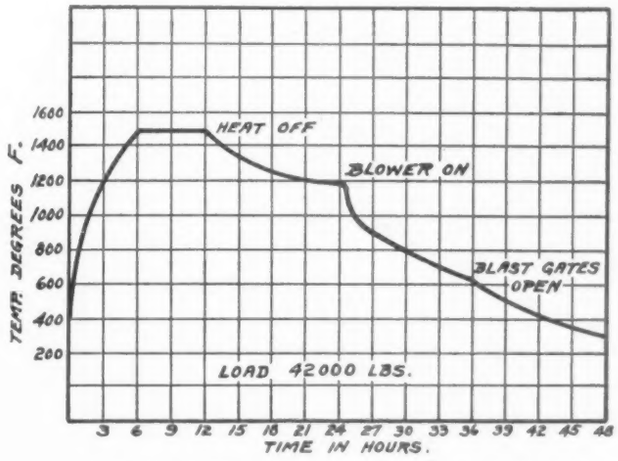
with G-E Car-bottom Furnaces and Obtain BOTH Controlled Heating and Controlled Cooling



Consider this typical, medium-size, electric car-bottom furnace used by one manufacturer to heat-treat forgings.

Dimensions. 18 ft. by 6 ft. by 3 ft.
Rating. 552 kw. — 220 Volts — 3-phase
Charge: 42,000 lb.
Ave. kw-hr. per ton: 292
Heating time: 6 hr. Cooling time: 27 hr.
Holding time: 6 hr. Total time: 39 hr.

This high furnace efficiency is obtained by employing a well-insulated wall lined with semi-refractory brick. The controlled cooling is effected in two stages: (1) indirectly by blowing air through 27 alloy cooling coils located beneath the roof; (2) directly by the use of blast gates and vents (see curve and outline drawing).



Heating and cooling curve for 552-kw., 220-volt, 60-cycle, 3-phase, air-cooled Type RRCB furnace.

The average figures for a 45-day run show an economy of 292 kw-hr. per ton. This is remarkable considering that each charge is started in a cold furnace.

Your nearest G-E office can give you further information on this furnace and other interesting G-E heat-treating furnaces.

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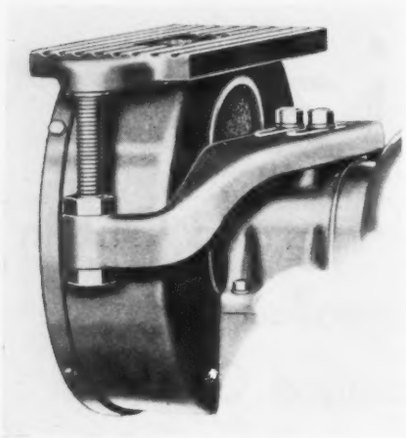


Surface grinding attachment designed by Hisey-Wolf Machine Co.

hard bronze, tapered on the outside to permit adjustment and lubricated from sight feed oil cups on the slide. The rating of the spindle motor is 15 horsepower at 1200 revolutions per minute constant speed. Effective cooling of the unit is assured by circulation of air maintained by a fan mounted on the rear end of the spindle.

This new spindle head design eliminates the conventional spindle pulley and countershaft and at least three belts, as well as a wheel drive drum and pulleys. The spindle-rotor unit is carefully balanced and in consequence runs without vibration. The maker states that about three times as much power is transmitted to the grinding wheel under the new system as was the case with the system formerly used.

Table drive is by means of a reversing type motor coupled directly to a reduction gear train consisting of a 30 to 1 double reduction worm gear, and a spur gear engaging the table rack. A self-contained motor-driven pumping unit circulates the grinding compound.

The machine mounts a 14 x 6 x 5-inch abrasive wheel and is built in standard lengths of 6, 8 and 10 feet. According to the maker, the new machine is unusually quiet and free from vibration, thereby giving fine finish. Also, a marked increase in production is said to result from the delivery of maximum motor power direct to the wheel.

◆

Surfacing Attachment for Bench or Floor Grinders

Hisey-Wolf Machine Co., Cincinnati, has brought out a simple attachment which converts one side of a bench or stand grinder into an effective surfacing machine for small parts. The accompanying illustration shows one of these attachments in place and indicates clearly its relation to the abrasive wheel and grinder head.

The attachment is a complete unit and is interchangeable with the standard wheel guard on either left or right side of the grinder head. The table is adjusted to compensate for wheel wear, by means of two rugged rods with square threads and opposed nuts.

The guard cover readily is removable to allow wheel replacement. Guard and cover both are of steel. The substantially designed table is 10 x 21 inches and is self-cleaning.

◆

Toggle Type Foot Press Is Quick and Powerful

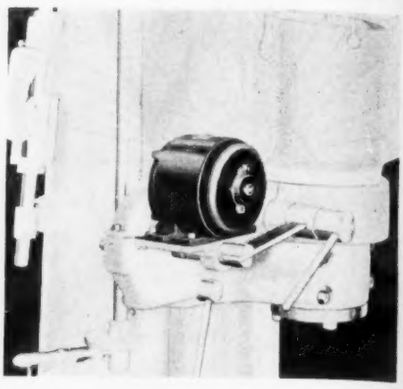
Whitney Metal Tool Co., Rockford, Ill., has put on the market a new toggle lever foot press in which are incorporated a number of improvements. One of these presses is shown in the accompanying illustration.

The ram is adjustable to give correct stroke, a positive stop locking against the crank arm. The foot pedal also is adjustable. A laminated member consisting of six hardened and ground tool steel plates serve to take up wear and to adjust the stroke position of the ram ½-inch up or down. All wearing parts are of hardened and ground.

The die holder is of bolster plate type, the bolster plate being provided with a T-slot to allow clamping on of stops or stripper plates. It also has material support and adjustable stops on either side and depth gage holes are drilled and tapped into both sides of the head for locating stripper fingers.

Toggle-type foot press developed by Whitney Metal Tool Co.

This press has throat depth of 7 inches, height of throat is 4 inches, slug clearance hole is 2¼ x 4¼ inches, and the ram has maximum stroke of 1-inch. Its capacity is a 2-inch hole in 16 gage mild steel and it can be operated at 100 strokes per minute.



Typical application of torque motor built by Ohio Electric Mfg. Co.

◆

Torque Motors Facilitate Remote Electric Control

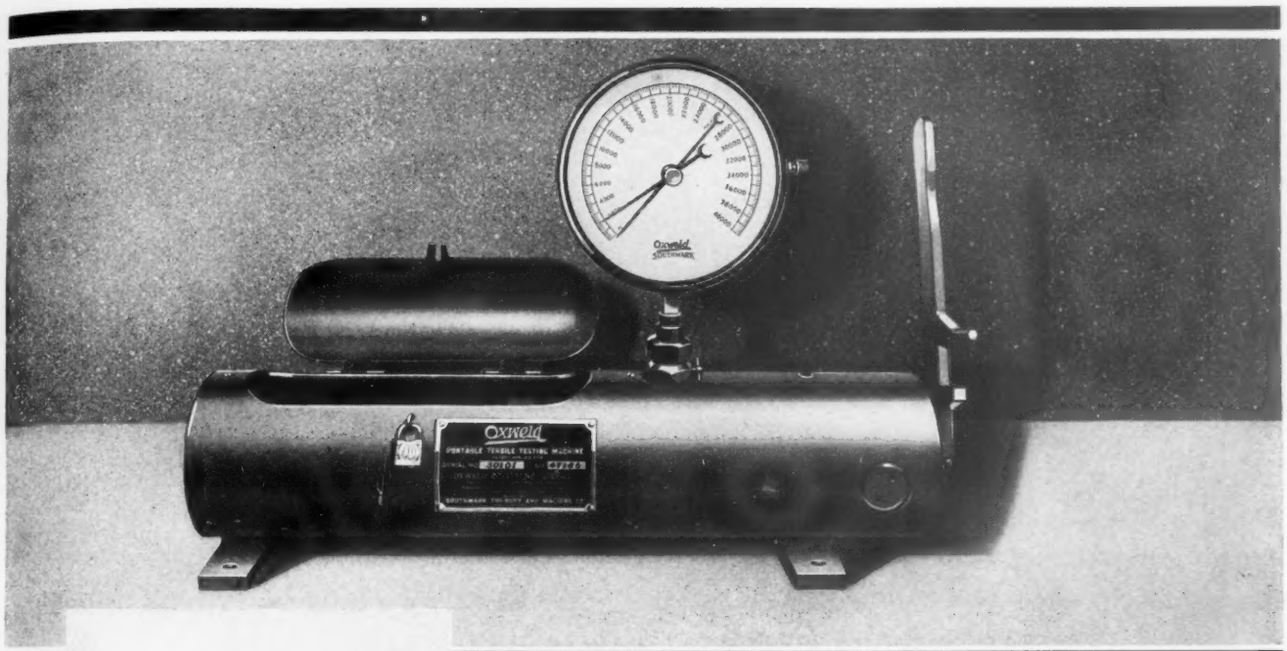
Ohio Electric Mfg. Co., 5900 Maurice avenue, Cleveland, has developed a line of slow speed torque motors, or "rotating magnets," for use in connection with electrical control of machine tools and other industrial equipment where simple and positive means of remote control is desirable.

In the accompanying illustration one of these torque motors is shown as applied to operate the arm clamp of a large radial drill built by Western Machine Tool Works, Holland, Mich. In this case the arm can be unclamped simply by reversing the torque motor. The clamp will remain either in locked or unlocked condition with the current to the motor cut off, but the motor is wound so that it may be stalled with current on continuously without danger of overheating or burning out.

The maker states that although thousands of motors of similar character are in use on elevators to operate the acceleration and reverse mechanism, the brakes, the door releasing and opening mechanism etc., their broad possibilities in the control of other types of industrial machinery are not generally appreciated.

These new torque motors can be wound to withstand stalling, with

The Oxweld « « PORTABLE TENSILE TESTING MACHINE



The Oxweld Portable Tensile Testing Machine

•

. . . has a direct pull capacity of 40,000 lb. . . . accommodates a coupon 7-16 in. x 1 1-2 in. x 8 1-2 in. . . weighs 165 lb. . . measures 6 3-4 in. in diameter and 28 in. in length . . . consists of a tubular compression member with a fixed set of grips in the head and with a hydraulic communicating pump and cylinder machined directly into the base.

GIVES *your Weld Tests* LABORATORY ACCURACY

The Oxweld Portable Tensile Testing Machine provides the most accurate field method of testing specimen welds. It was developed especially for determining the ability of welding operators in production welding departments and pipe line crews.

This small, moderately-priced instrument is hand-operated on the hydraulic pump principle and has a direct pull capacity of 40,000 lb. Readings are taken from the hand-calibrated gauge, which has a zero-adjusting maximum hand. This machine can be set up and used at a moment's notice. It weighs only 165 lb. and can be shipped or stored in its own case.

The price of the Oxweld Portable Tensile Testing Machine ($700.00 f. o. b. factory) puts it within reach of every welding organization. Ask the nearest Linde District Office to show you its many advantages.

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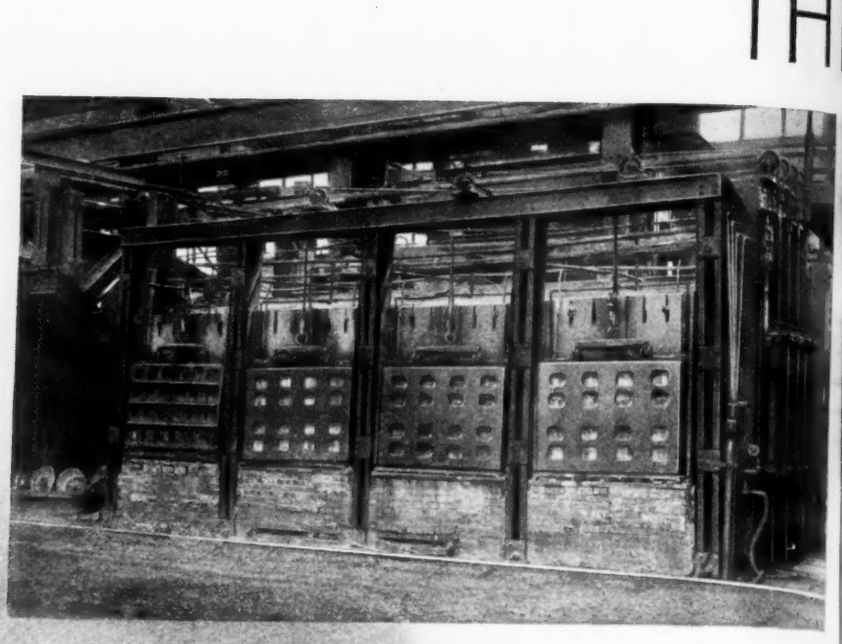
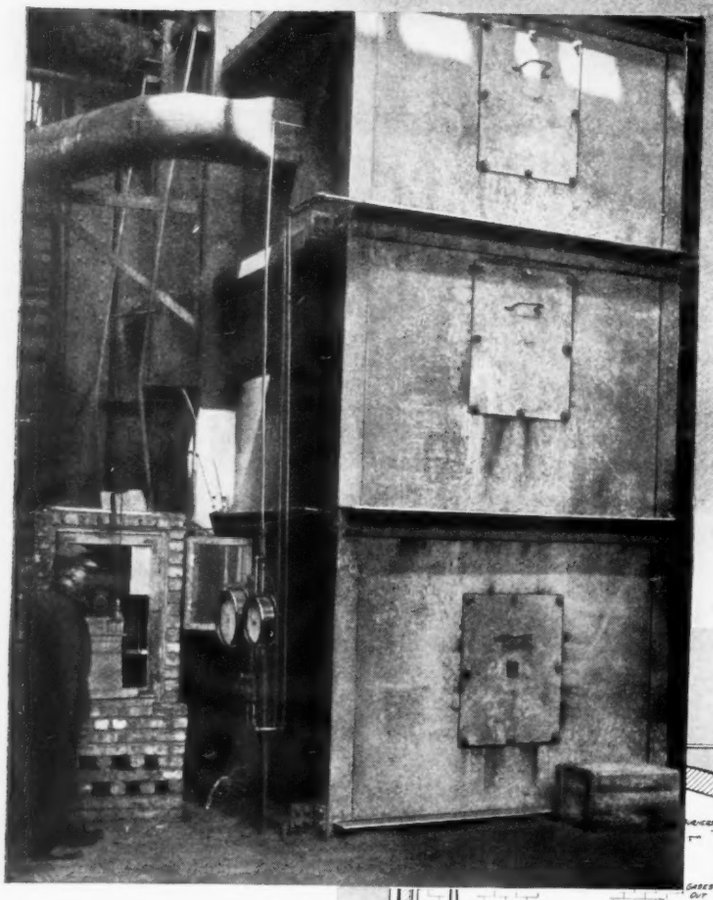
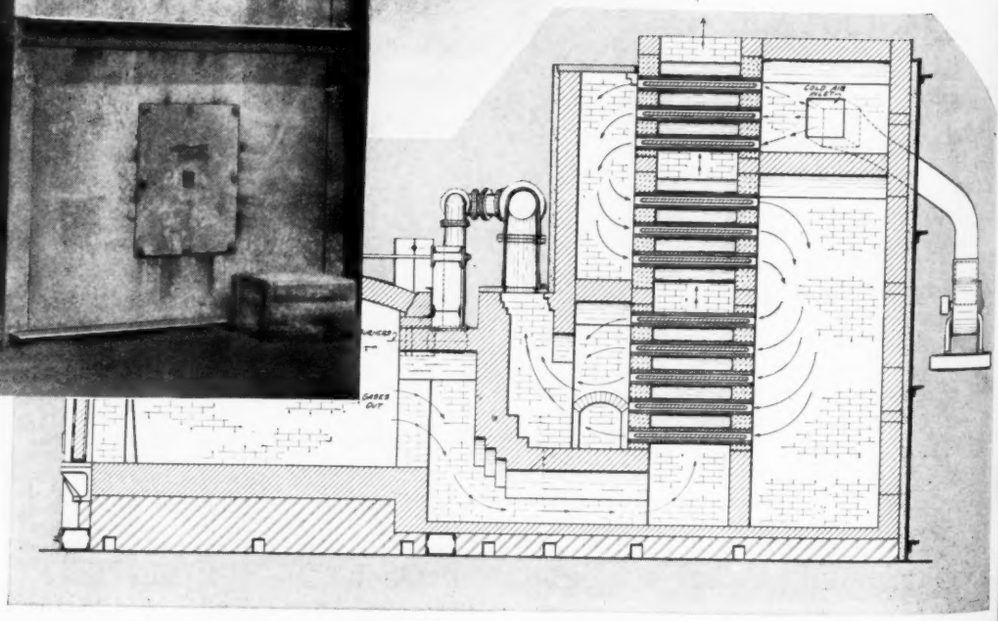






THE CARBORUNDUM COMPANY

REG. U.S. PAT. OFF.

RECUPERATOR

Easily added to existing Furnace Installations.

ONE feature of this recuperator that appeals to industry is the ease with which it can be added to present furnace equipment.

For instance, it is not necessary to reconstruct your furnaces.

The vertical type recuperator in most cases does not require a stack.

Reversing valves and regenerators are eliminated—and simultaneously firing at both ends of the furnace is made possible.

This recuperator has made possible the successful use of scrubbed blast furnace gas supplied at atmospheric temperature.

The resulting operation compares most favorably with the best regenerative practice and first cost is materially reduced.

The Carborundum Company Recuperator has no moving or metal parts subject to deterioration under severe temperature conditions.

Tubes of "Carbofrax," the Carborundum Brand Silicon Carbide Refractory are employed for transmitting heat from waste gasses to air for combustion.

These tubes show astonishingly long life—have remarkably high heat conductivity and refractoriness.

[Our Engineering Staff will gladly give you more details]

△

VISIT THE CARBORUNDUM EXHIBIT AT NATIONAL METAL EXPOSITION

▽

THE CARBORUNDUM COMPANY, Perth Amboy, N.J.

(CARBORUNDUM AND CARBOFRAX ARE REGISTERED TRADE MARKS OF THE CARBORUNDUM COMPANY)

current on and exerting their full power, for predetermined periods such as 10 minutes out of every hour, or continuously as in the case of the radial drill control already mentioned. Ordinarily they are designed to rotate at 600 or 1200 revolutions per minute when running free. At the same time they have the ability to carry their load at any lower speed determined by the load itself. this without endangering the motor.

Windings can be provided for direct current, for polyphase alternating current, and to a limited extent for single phase alternating current, it being advisable that the motor be designed specifically for the work which it is to do.

The maker recommends these torque motors in cases where compressed air, steam, or electric solenoid control ordinarily would be used. In addition to the machine tool applications, they have been applied successfully to valve operation and to driving pumps which must maintain pressure between given limits. Those which have been in service for three or four years have given dependable service at low operating and maintenance cost.

◆

Multi-Spindle Machine Is Driller or Tapper

National Automatic Tool Co., Richmond, Ind., has now developed a new line of multiple spindle drilling and tapping machines. These machines, which have wide range of adjustment to permit the handling of work of various sizes, are built as drillers only, as tappers only, or as combinations of both. One of these machines in operation on a flange drilling job is shown in the accompanying illustration.

Multiple spindle machine built by National Automatic Tool Co.

The machine is of vertical box frame type with overhung head and adjustable knee type table having foot-operated feed. Drive is from a vertical ball bearing motor mounted at the top of the column. This motor is designed to withstand severe reversal load without heating, the 1-horsepower type type being capable of 50 reversals per minute, while the 2-horsepower type is capable of 30 reversals per minute.

The head, which has drilling area of 5½ x 10 inches, is built to receive ten spindles. Any not needed can be omitted. The spindles are held in place by an adjustable arm bolted to the underside of the head flange. A unique feature is that vertical adjustment of 1¼ inches is possible on all spindles, which effectively compensates for drill wear.

Roller Bearings Used

With the one exception of the bearings at the upper part of the spindles, which are or high grade bronze, all gears are supported by tapered roller bearings. The gears themselves are made of hardened alloy steel and are packed in grease.

Standard spindles are reamed and threaded to receive an improved spring collet developed by this company to center and grip straight shank drills and taps. When taps of different pitches are used at once a float is provided in one or more spindles. When all taps are of the same pitch, a standard drilling spindle can be used for tapping.

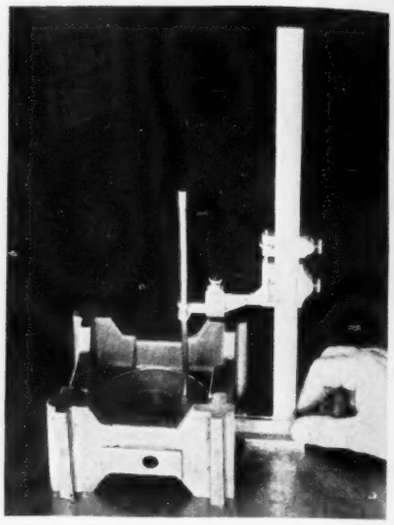
An arm-type limit switch controls the point of tap reversals with such exactness that blind holes can safely be tapped close to the bottom. These machines have capacity to handle ten ¼-inch drills or ten 3/16-inch taps in mild steel.

◆

Accessory for Height Gage Makes It a Depth Gage

Brown & Sharpe Mfg. Co. Co., Providence, R. I., has put on the market attachments for use on its 10 and 18-inch vernier height gages whereby they readily are converted into precision depth gages. One of these attachments, in place and in operation, is shown in the accompanying illustration.

The attachment consists of a hardened and ground steel rod, knurled at one end to insure easy setting, a U-shaped fork through the prongs of which the rod passes, and a knurled thumb screw threaded through the back of the fork. The illustration indicates plainly the simple manner by which the attachment is locked to the arm of the vernier by means of the fork and clamping screw.



Brown & Sharpe depth gage attachment for vernier height gages

These attachments permit vernier measurements to be taken over high projections and in deep recesses, which makes them particularly useful on precision jig, tool and die work.

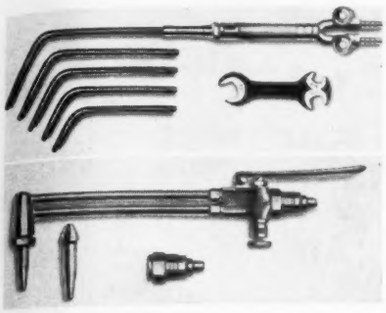
◆

Heavy Duty Storage Cells Occupy Standard Area

Edison Storage Battery Co., Orange, N. J., has added to its list of cells in regular production a new series of large capacity units. These are manufactured in five different ampere hour capacities ranging from 337.5 to 675. Rated watthour capacity is 50 per cent above that of the smaller units.

These new cells vary from the regular type only in the respect that each positive and negative plate is approximately 50 per cent higher. When assembled in trays they occupy the same square area of battery compartment floor space as the coresponding type of lower capacity cells containing the same number of positive plates. The height of the larger cells is about 6 inches greater than of the regular ones.

The manufacturer recommends these new nickel-iron-alkaline storage battery cells of all steel construction as rugged, foolproof equipment for indus-



Welding and cutting torches added to Linde Air Products line

trial trucks, tractors, locomotives, etc., wherein 50 per cent increased working ability on a single charge, without increased square area of battery compartment floor will be advantageous.

Ratio Type Flow Meter Is Exact Combustion Guide

Bailey Meter Co., 1050 Ivanhoe road, Cleveland, has developed a ratio meter for use as a combustion guide in the control of gas or oil-fired heaters, kilns and industrial furnaces. One of these meters is shown in the accompanying illustration.

Its primary purpose is to provide furnace operators with an easily understandable guide which will enable them to maintain a definite relation between amounts of air and of fuel supplied to a burner, thereby insuring maximum combustion efficiency.

Two recording pens are employed: One for rate of oil flow, this being mechanically actuated by differential pressure produced by an orifice in the fuel line; the other recording air flow to the burner in a similar manner. During installation, a combustion test is run to determine proper ratio of air flow to oil flow, the air flow mechanism then being adjusted so that this ratio is maintained so long as the two records coincide—one upon the other.

In operation, should the air flow pen rise above the fuel flow pen, too much air is being admitted, with consequent stock losses. Conversely, should the air flow pen fall below the fuel flow pen, too little air is being admitted, with consequent unburned fuel loss. To attain maximum efficiency, the furnace operator merely keeps the two pens together by proper manipulation of the air supply.

This instrument also serves as an effective fuel meter, indicating and recording in any convenient terms. Total fuel flow can be measured by a four-dial integrator which is optional equipment. Thus, in addition to furnishing graphic day by day records of furnace operation, it supplies cost accounting data.

Auxiliary temperature and pressure recorders readily can be attached to record these factors in distinctive colors on the chart with the flow records. The 12-inch diameter charts are uniformly graduated and are marked with direct reading scales, making comparison of related factors a simple operation.

New Torches Developed for Gas Welding and Cutting

Linde Air Products Co., 30 East Forty-second street, New York, recently has made two additions to its line of medium pressure apparatus

Bailey ratio meter which is a dependable combustion guide

for oxyacetylene welding and cutting. These new torches, together with accessories, are shown in the accompanying illustration.

The new No. 11 welding torch, which is shown together with its five standard tips and wrench in the upper panel of the illustration, has unusually wide range.

In spite of this wide range, the torch is light in weight and is well balanced. The tips are of one-piece, hard-drawn copper construction and are so designed that the head angle easily can be adjusted by the user to suit specific requirements. Tips Nos. 2, 4, 6, 8 and 10 are furnished as standard equipment.

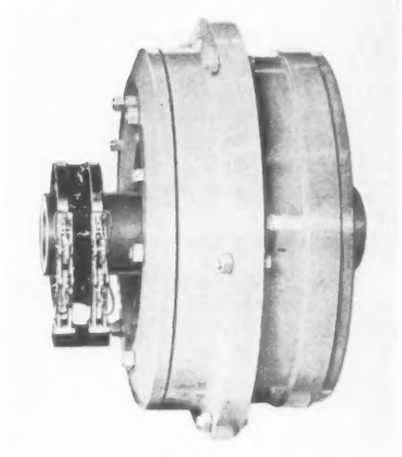
The cutting attachment, shown in the lower panel of the illustration, will cut metal up to 2 inches in thickness. It is furnished with both one and two piece cutting tips. By means of this attachment the No. 11 welding torch can easily and quickly be converted into a cutting torch. The maker states that this is the lightest cutting attachment on the market, its weight being only 1 pound and 8 ounces. By means of an adapter, this cutting attachment also can be used with the No. 20 welding torch made by this company.

New Magnetic Clutches Are Simple and Reliable

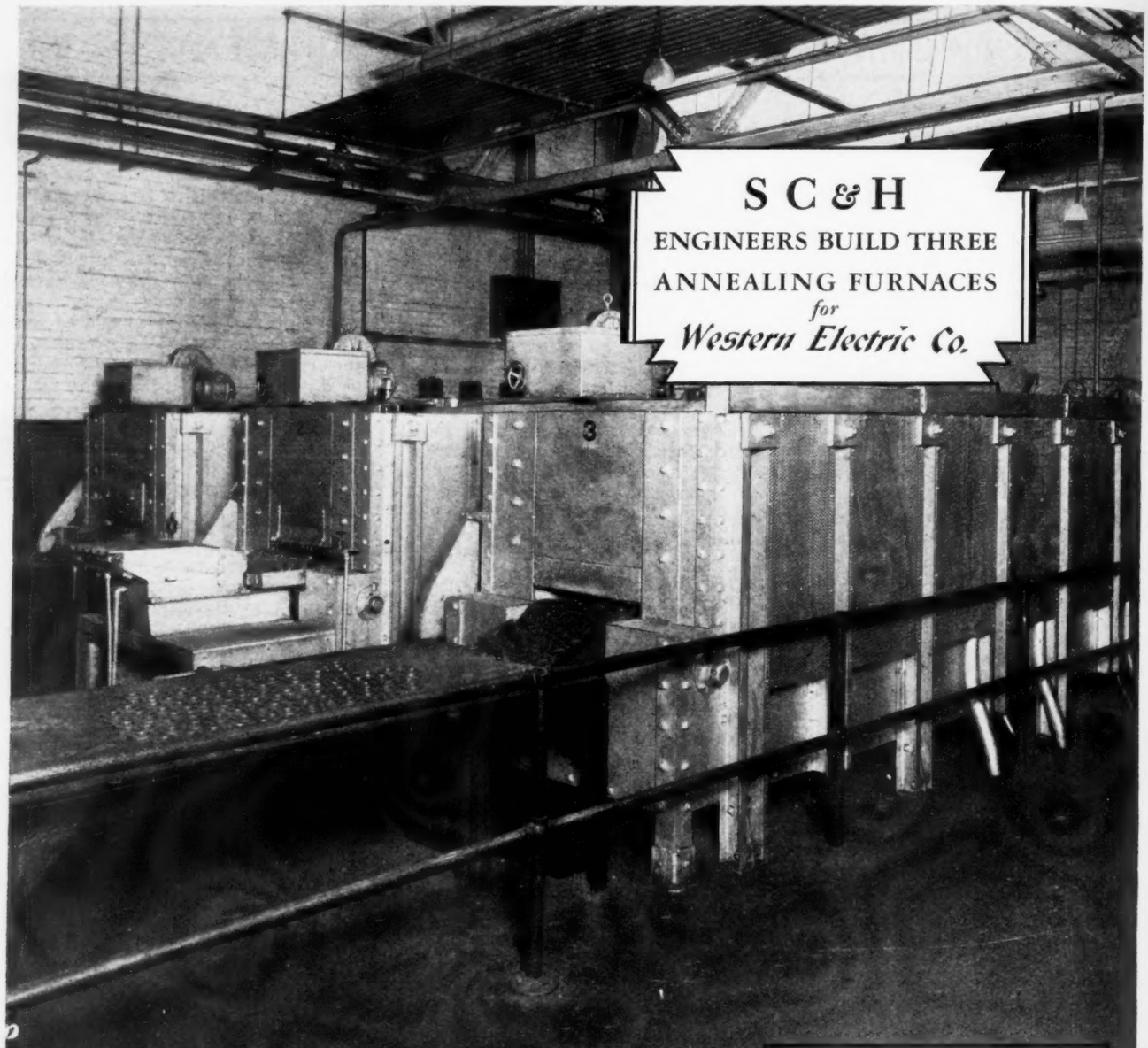
Magnetic Mfg. Co., Milwaukee, announces a new multiple disk magnetic clutch which differs considerable, both in design and in operation, from all other types. The accompanying illustration shows this clutch assembled, as it appears when installed.

The design makes for simplicity in construction, operation and adjustment. Spring plate and pins have been avoided in its drive mechanism and armature and field do not move relative to each other. As a matter of fact there virtually are no moving parts, such as toggles, cams, rollers or yokes to get out of order. It may be said that there is only one wearing surface, this being a friction lining, and a single adjustment takes this up to compensate for wear.

Small diameter clutches of this new type are capable of carrying heavy loads, their large area of multiple disks providing ample gripping power at low unit pressure. These features allow installation in restricted spaces and reduce maintenance to the minimum.



Compact magnetic disk clutch developed by Magnetic Mfg. Co.



WHILE *Strong, Carlisle & Hammond* Engineers have designed, built and installed industrial furnaces for manufacturing plants of every size over a period of many years, it is especially significant that S C & H furnaces are used by many of the largest and most famous plants known the world over.

These three electric furnaces recently installed in the Hawthorne Works of the Western Electric Company are used for annealing. Operating temperature varies between 930° F and 1000° F. Each furnace has four control zones, and each is equipped with woven wire mesh belt conveyer 18″ x 18′ in dimensions. Elements are located above and below conveyer. SC & H Type 640 furnaces are built for temperatures up to 1650° F.

Call in SC & H Engineers on your heat treating problems. They will submit complete designs and specifications for any type of furnace. The Strong, Carlisle & Hammond Co., 1382 W. Third St., Cleveland, O.

S C & H Furnaces are made for annealing, case hardening, carburizing, forging, cyaniding, lead hardening, nitriding and oil tempering. They are built in all sizes of Oven, Pot, Continuous, and Special Types for Electric, Oil or Gas application.

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STRONG, CARLISLE & HAMMOND

MANUFACTURERS OF ELECTRIC, OIL AND GAS INDUSTRIAL FURNACES

Operations Off; Rebound Expected

Belief in Moderate Upturn This Month and Next Prevails, Despite Light Current Bookings—Drop in August Ingot Rate Less Than for Pig Iron

STEELMAKING operations this week are down to about 28 per cent, three points under last week, and the lowest since the beginning of the depression, due, of course, to the interruption of Labor Day. The outlook is that next week operations will rebound, at least to the level prior to the holidays. This expectation, however, is not based on any turn for the better in tangible demand.

Considering all products, there is no change in the market situation so far as mill books are concerned, and no expansion in consumers' commitments. But, there still is a rather widespread conviction that over the final weeks of September, and carrying through October, there will be some mild improvement. This, too, is more of an expectation than a deduction founded on actual business.

Even structural steel, which has been one of the major supports of the market, fails to display much activity this week. Structural awards for the week, amounting to 20,184 tons, are less than a fifth as large as last week, and less than one-half of the 47,615 tons in the comparable week last year. The largest single award is 8200 tons for highway work in Newark, N. J.

Inquiry for structural steel at New York continues to pile up, with 40,000 tons additional about to come out, of which 25,000 tons is for elevated highways. Bids go in this week on 22,500 tons for a freight terminal for the Port of New York Authority. Eleven million dollars have been released for Illinois highway work.

Automotive requirements are almost certain to increase as September wears on, due to the scheduling of many new models for October and November production. Ford has distributed orders for 25,000 of certain parts to complete current models. Railroad releases of track material are moderately broader at Chicago, but diminished elsewhere. An inquiry from Lincoln, Nebr., for 12,000 tons, is the largest of fresh requirements for pipe. Due to an anticipated advance in railroad freight rates, inquiries at Pittsburgh for general cargo and tank barges is more active, one line inquiring for as many as 40. More Belgian wire fencing and netting has been imported by the Chicago mail order houses.

Because of low demand and the rather general conviction that current prices are at, or close to the bottom, interest in prices for fourth quarter is only mild. The general expectation is that most of the current levels will be extended. Strip prices have been reaffirmed for fourth quarter; wire prices are to be announced this week. Large rivets have been marked down $5 a ton, effective Sept. 9. The leading independent at Chicago has extended its sheet quotations for the next quarter.

Although production of steel ingots declined in August, as did the output of pig iron, the decrease in the daily average for ingots was only 8.3 per cent, while for pig iron it was 12.7 per cent. The August rate of ingot production was 31.1 per cent, lowest since December, 1921.

Actual daily ingot output was 66,133 gross tons, compared with 72,160 tons in July, and 117,722 tons in August, 1930. Total output during the month was 1,719,462 tons, against 3,060,763 tons last year. For the eight months this year steel ingot production was at the rate of 42.9 per cent; last year, at 71.3 per cent.

In raw materials, the prospects for improved shipments of pig iron are beginning to materialize moderately. The only price change of note is a reduction of $2 a ton in Lake Superior charcoal iron at Chicago.

STEEL's price composites are unchanged this week, at $31.04 for steel and iron; $48.72 for finished steel, and $8.66 for steelworks scrap.

Composite Market Averages

	This Week (Sept. 9)	Last Week (Sept. 2)	One Month Ago (Aug., 1931)	Three Months Ago (June, 1931)	One Year Ago (Sept., 1930)	Ten Years Ago (Sept., 1921)
Iron and Steel Composite	$31.04	$31.04	$31.05	$31.02	$32.65	$35.34
Finished Steel Composite	48.72	48.72	48.72	48.60	50.87	54.73
Steelworks Scrap Composite	8.66	8.66	8.70	8.84	12.81	10.97

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite:**—Plates, shapes, bars, sheets, hot strip, nails, wire, tin plate, pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Sept. 9, 1931	August 1931	June 1931	Sept. 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.26	20.13
Basic, valley	17.00	17.00	17.00	17.75
Basic, eastern del. eastern Pa.	16.75	16.75	17.00	17.90
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.26	19.13
No. 2 foundry, Chicago	17.50	17.50	17.50	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	17.26	17.51	17.76	19.76
Malleable, valley	17.00	17.00	17.00	18.35
Malleable, Chicago	17.50	17.50	17.50	17.50
Lake Superior, charcoal, del. Chi.	25.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.63	18.50
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.40	2.40	2.40	2.60
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.00	29.00	31.00
Sheet bars, open-hearth, Pitts.	29.00	29.00	29.00	31.00
Billets, open-hearth, Pittsburgh	29.00	29.00	29.00	31.00
Wire rods, Pittsburgh	35.00	35.00	35.00	36.00

	Sept. 9, 1931	August 1931	June 1931	Sept. 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.65	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.89	1.89	1.94	1.89
Iron bars, Chicago	1.70	1.70	1.70	1.75
Shapes, Pittsburgh	1.60	1.60	1.65	1.60
Shapes, Philadelphia	1.76	1.76	1.76	1.66
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.65	1.60
Tank plates, Philadelphia	1.80½	1.80½	1.85½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	2.10
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.40	2.15	2.40
Sheets, No. 24, galvan., Pitts.	2.90	2.90	2.80	3.00
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.55	2.40	2.60
Sheets, No. 24 galvan., Chi.	3.05	3.05	2.95	3.25
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.90	1.90	1.80	2.00
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$11.00	10.70	10.30	15.70
Heavy melting steel, eastern Pa.	8.75	8.55	8.75	13.00
Heavy melting steel, Chicago	8.00	8.25	8.50	12.25
No. 1 wrought, eastern Pa.	9.75	9.75	10.00	14.25
No. 1 wrought, Chicago	8.00	8.25	8.25	11.25
Rails for rolling, Chicago	10.50	10.50	10.90	14.50

Sheets

Market Continues Quiet—Effort to Be Made to Strengthen Autobody Fourth-Quarter Price

SHEET PRICES, PAGE 77

Pittsburgh—Signs of seasonal improvement in sheet demand still are absent, specifications and new business continuing at the quiet rate of preceding several weeks. Interest on the part of consumers in future requirements is lacking and producers have had little occasion to quote on fourth quarter tonnage. It is believed that there will be little change in prices from current levels for that period, although there are some possibilities that an attempt will be made to strengthen the price of autobody sheets, which have suffered sharp reductions over the past 18 months. Prices generally are steady, with hot-rolled annealed sheets 2.40c, galvanized, 2.90c; blue annealed, 1.85c; and autobody 3.10c. Mill operations have been affected by the holiday shutdown, the average for the remainder of the week holding at the former 30 to 35 per cent rate.

New York—Sheet prices continue steady although it still is too early to gage their strength for the coming quarter. Demand is light.

Youngstown, O.—Sheet purchases so far in September run parallel with those in August and the latter part of July. It was expected that with the passing of Labor Day there might appear at least the forerunner of a better demand for automotive sheets, but this expectation still is unsatisfied. However, in view of the apparent certainty of new models about to be brought out, sheetmakers are hopeful of improvement in the next ten days. Common black and galvanized sheets are in no better demand than autobody. Mills making these grades are operating at about 25 per cent. Prices of all grades are firm.

Cincinnati—Sheet mill operations are down slightly as demand for road construction materials show seasonal decline. Revival in demand for autobody sheets has not begun. Prices continue firm.

Cleveland—September thus far has brought little forward buying, and there is an almost complete absence of inquiry for fourth quarter. One large local interest is sounding out the market for that period. Prices hold well on light orders, and there is some basis for expecting that present figures will be reaffirmed for the remainder of 1931. Specifications are anticipated from a number of motor car manufacturers for revised practice on forming of fender stock and hood sections for 1932 models. Operations of local barrel manufacturers are spotty. Metal furniture production is somewhat lower in districts east of here.

Chicago—Less-carload orders predominate in sheet business. Mills are maintaining 35 per cent operations, unchanged from a week ago. The Milwaukee mills of the leading independent will remain on for a short time to complete automobile license plate orders. Production was down over the week-end because of the holiday. The leading independent has reaffirmed current sheet prices for fourth quarter.

St. Louis—Sheet business is light. Deliveries in August were slightly in excess of July, and compare favorably with a year ago. Prices are firm.

Birmingham, Ala.—Sheet orders make the best showing in the finished steel market. Mills are operating at 50 per cent.

To List Chain Standards

Washington—All manufacturers of welded chain who have accepted the simplified practice recommendations for this industry have notified the bureau of standards that they will identify the simplified lines in their new catalogs and trade lists, as a means of assisting buyers to maintain adherence to the waste elimination program.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh base	1.70c
Gary, Ind. Harbor, base	1.80c
Chicago, del.	1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.20½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.50c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del.	2.75½c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25½c

AUTOMOBILE No. 20

Pittsburgh, base	3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.65c
Gary base	2.75c
St. Louis, del.	2.90½c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c
St. Louis, del.	2.70½c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c
St. Louis, del.	3.30½c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c
Woven wire fencing, (9-11 ga.)	$55.00 and $60.00
(12½ ga. and lighter)	60.00 and 65.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.50c
Struc., c.l., Chicago	2.60c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70, 10 and 5 off

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.80½c
New York, delivered	1.88c
Boston, delivered	2.00c
Chicago, base	1.70c
Cleveland, base, for railroads	1.65c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham, base	1.75c to 1.80c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.85c to 1.95c
St. Louis, del.	1.95½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.76c
New York, del.	1.85½c
Boston, del.	1.98½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham base	1.75c to 1.80c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.00c
Cleveland, base, local del.	1.65c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.89c
New York, del.	1.93c
Boston, del.	2.00c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.60c
Eastern mills	1.50c to 1.55c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c
New York, delivered	1.93c to 2.03c
Philadelphia, delivered	1.89c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.60c to 1.80c
Chi., rail steel	1.35c to 1.60c
Chi., rail steel, bridge and culvert	1.60c to 1.65c
Philadelphia, cut lengths	2.14c
Cleveland, cut lengths	1.75c to 1.80c

Cold Finished Bars, Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10 Cr.	0.45
2300	1.50	51.00 Cr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Carbon Van.	0.95
3300	3.80	9250 (flats)	0.25
3400	3.80	9250 (rds.,sq.)	0.50
4100 .15 to .25 Mo.	0.50	Cr., Ni., Van.	1.50
4600 .20 to .30 Mo.			

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.65c
Do, 6 1/16 to 24-in., Pitts.	1.55c
Hot strip, bands 6 in. and under, Chicago	1.75c
Do. 6 1/16 to 24 in.	1.65c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	1.85c to 1.95c
Cold rolled strip, Pitts., Cleveland	2.15c to 2.25c
Worcester, 3 tons, over	2.30c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 and 10 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 and 10 off

Tire bolts ..... 60, 10 and 10 off

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅝ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 and 10 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off

Upset 1 in. and smaller ..... 80-10-5 off

Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c

Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.

Chain, BB, BBB 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Demand Moderately Above That of August—Fourth Quarter Inquiry Light—No Prices Named

BAR PRICES, PAGE 77

Chicago—Automotive bar consumers, which include partsmakers and cold-rolled and finished buyers, are less hopeful of consequential automotive orders this month, but are gaging October schedules to increased automotive business. Bar mills are operating 30 to 35 per cent, largely on deformed bar and miscellaneous manufacturing shipping orders. Deformed bars continue to lead shipments. Additional fourth-quarter inquiries are being received, several from western railroads. No official quotations are out for fourth quarter, but as 30-day contract sales have been extended at 1.70c, Chicago, that price may be said to cover business already booked into part of that period.

New York—Commercial steel bars are 1.60c, Pittsburgh, with the likelihood that this price will be reaffirmed for fourth quarter. Demand has not begun to reflect seasonal improvement. Common iron bars are 1.60 to 1.70c, Pittsburgh.

Pittsburgh—Bar demand is moderately ahead of the rate of a month ago, but progressive improvement over the past several days has been lacking. Specifications from automotive users remain spotty and are little changed since the latter part of August. Fourth-quarter inquiry so far is scarce and producers have taken no stand on prices, although it is believed that the present 1.60c market will be continued into that period.

Youngstown, O.—Purchases of small lots of common steel bars, from a variety of sources, make up an aggregate tonnage from week to week that permits mills to operate around 30 per cent or less. These purchases are at 1.60c, Pittsburgh.

Cleveland—Bars are 1.65c, base Cleveland, both local and outside delivery, on a slightly better volume of sales as September opened. Inquiry has developed in proportion, activity being noted from several local manufacturing plants and unexpected specifications from automotive interests.

Tin Plate Releases Better; New Orders Limited

Tin Plate Prices, Page 77

Pittsburgh—Some tin plate producers have received better releases against material already produced, but new commitments and operations lack improvement. Production is lower this week as a result of the holiday shutdown, but the average for the remaining days continues unchanged at slightly below 50 per cent. No reports are heard regarding packs of tomatoes and corn having any marked effect on the tin plate situation. The market continues $5, Pittsburgh, per base box.

P. & C. Tool Service, 2743 Locust street, St. Louis, has been made distributor for the P & C Hand Forged Tool Co., Portland, Oreg.

Cold-Finished Sales May Show Improvement

Cold Finished Prices, Page 77

Pittsburgh — Specifications for cold-finished steel bars are at an unchanged rate but producers look for a moderate improvement before the end of September. Requirements of the automotive industry are not expected to show any material expansion but some gain is anticipated in demands of miscellaneous consumers. The market continues fairly steady at 2.10c and no change is expected from this level for fourth quarter.

Cleveland—Cold-finished bars are being released at the recent restricted rate with the 2.10c, Cleveland, base price, being applied on all new business. Stock moving from the mills to jobbing outlets has been particularly quiet.

Plates

More Tank Work Active at Chicago—Barge Inquiries Stimulated by Prospect of Rail Rate

PLATE PRICES, PAGE 77

Chicago—Further oil tank inquiry in the East Texas area has added 1300 tons to pending work. It is estimated 3000 to 5000 tons of tank work is active in that territory. Plate prices are 1.70c, base, Chicago. Inquiries are out for light structurals and plates from three or four western railroads for fourth quarter. Specifications are a little ahead of a week ago, but sales show no gain of consequence.

New York—Aside from demand for structural work, plates have been moving slowly. A few thousand tons of shipwork is in early prospect. Plates are 1.70c, Coatesville, Pa., with the likelihood that the price will be continued at this level into the fourth quarter. Recent structural work includes several hundred tons of plates for the New Jersey state viaduct, requiring in all 8200 tons of structural material, placed with Taylor-Fichter Steel Construction Co.

Philadelphia—With mail contracts approved, the Colombian Steamship Lines expect to award contracts immediately to Newport News Shipbuilding & Dry Dock Co., for two ships requiring an aggregate of 7200 tons of plates, shapes and bars. Plates are 1.70c, base, Coatesville, Pa.

Pittsburgh—The Mississippi Valley Barge Line Co. is asking for bids on cargo barges, the inquiry calling for up to 40, requiring a maximum of 5000 tons of steel. Miscellaneous inquiry is heavier, including several tank barges. A prospective increase in rail rates is seen as one stimulating factor to inquiry for river equipment. Plates continue 1.60c, Pittsburgh.

Cleveland—Plate specifications are dull, billings continuing at 1.65c, Pittsburgh. Two Cleveland contractors are low and second low on the general contract to build the Pymatuning dam for Pennsylvania, at Jamestown. About 900 tons of sheet piling and 30 tons of concrete bars will be required. Plate operations in a nearby Mahoning valley mill are on full-turn this week, as well as last, working off an accumulation of orders.

Contracts Pending

5000 tons of steel, mainly plates, maximum of 40 barges, for Mississippi Valley Barge Line Co., St. Louis.

400 tons, 22 pontoons, for United States engineers, Memphis district; bids close Sept. 15 on 14 pontoons and on Sept. 22 for eight.

120 tons, medium steel plates, for New York or San Francisco; bids Sept. 22, navy bureau, supplies and accounts, Washington.

In June Russia imported $345,712 worth of forging machinery from the United States.

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COLD ROLLED STRIP STEEL

WIRE AND WIRE PRODUCTS

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NATIONAL TUBE COMPANY — *Pipe and Tubular Products*

CARNEGIE STEEL COMPANY, AND ILLINOIS STEEL COMPANY — *Bars, Plates, Shapes, Special Sections and Semi-Finished Products*

Structural Shapes

Contracts Are Under Year's Weekly Average, yet New York Inquiry Is Bright Spot —New Jersey Bridge Heads Awards—5000 Tons Placed in Chicago

STRUCTURAL SHAPE PRICES, PAGE 77

New York—Structural steel inquiry continues to increase. Contracts will be let in November for 14,000 tons, towers at Astoria and Wards Island for the suspension bridge in the Triboro span project over Hell Gate. Delay in midtown dock plans is holding up superstructure details for the open section of the West Side elevated highway above Twenty-second street to Fifty-ninth street. Estimates place steel requirements for this project at least 25,000 tons. City of New York work looms heavier. General contracts have been placed for jobs taking more than 15,000 tons of steel. Work about to come out will require more than 40,000 tons, including elevated highway, docks, department of hospitals, health and sanitation building, hospitals and schools. This is exclusive of federal work. General contract bids go in Friday on 22,500 tons for the Port Authority inland freight terminal. Plain material prices on the bulk of business placed are firm and unchanged at 1.70c, Bethlehem, Pa.

New York Structural Steel board of trade reports bookings in the metropolitan district during August of 37,301 tons, against 18,850 in July and 6168 tons in August of 1930.

Boston—Structurals fell off sharply in the past week. New England Structural Co. was awarded 200 tons for two small state bridges at Foxboro, Mass. The only pending contract is for 100 tons for an addition to the Third District courthouse at East Cambridge, Mass.

Philadelphia—Structural demand is slightly more active with shapes moving generally at 1.76c, Philadelphia.

Pittsburgh—Structural awards have declined to a low level and inquiry also is quiet. The market usually holds at 1.60c, Pittsburgh.

Chicago—Bridge structural steel awards and publicly financed projects accounted for over 5000 tons of structural work placed during the week. Some fourth quarter inquiry for plain material is out. Nearby contracts recently have been extended at 1.70c.

Cleveland—Mill specifications have shown a slight gain since August closed and prices on plain material hold at 1.60c, Pittsburgh. Fabricated prices, however, still are weak, even a recent 40-ton award going at $45 a ton f.o.b. Cleveland. Wellman Engineering Co. will fabricate 180 tons in a dirigible mooring mast.

Contracts Placed

8200 tons shapes, 310 tons steel castings and 6600 feet railing, superstructure, highway viaduct and ramps, route 25, connecting link, section 7, 7A and 8, Newark, N. J., New Jersey state highway commission, to Taylor-Fichter Steel Construction Co., New York.

5000 tons, power house, King's county hospital, Brooklyn, N. Y., to American Bridge Co., Pittsburgh, through Wills, Taylor & Mafera Corp., New York, contractor.

1200 tons, postoffice and federal building, Little Rock, Ark., to Virginia Bridge & Iron Co., Roanoke, Va.

800 tons, public health service building, Washington, to American Bridge Co., Pittsburgh, through Wills, Taylor & Mafera Corp., New York, contractor.

800 tons, bridge over Pennsylvania railroad tracks, Baltimore, to American Steel Engineering Co., Philadelphia, through Catalano & Pecora, contractors.

800 tons, postoffice, South Bend, Ind., to Fort Pitt Bridge Works Co., Pittsburgh.

750 tons, two bridges, Warwick and Garrison avenues, Baltimore, to Fort Pitt Bridge Works Co., Pittsburgh.

695 tons, coal conveyors in Pennsylvania for Philadelphia & Reading Coal Co., to American Bridge Co., Pittsburgh.

600 tons, approach to Wabash avenue bridge, Chicago, to Duffin Iron Co., Chicago.

550 tons, Twenty-second street bridge, Two Rivers, Wis., to Worden-Allen Co., Milwaukee.

520 tons, auto service shop and garage, Newark, N. J., board of city commissioners, to Breen Iron Works, Newark.

500 tons, bank, Richmond, Va., to Virginia Bridge & Iron Co., Roanoke, Va.

450 tons, highway bridges in Minnesota, 220 tons to American Bridge Co., Chicago, and remainder to Minneapolis-Moline Power Implement Co., Minneapolis; Clinton Bridge Works, Clinton, Iowa, and Illinois Steel Bridge Co., Jacksonville, Ill.

350 tons, Deering memorial library, Northwestern university, Evanston, Ill., to Hansell-Elcock Co., Chicago.

325 tons, airplane hangar and office building, Kansas City, Mo., to Kansas City Structural Steel Co., Kansas City.

300 tons, highway bridge, Rapid City, S. D., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

300 tons, garage, 159 East Eighty-third street, New York, to Cosmic Iron Works, Bronx, N. Y.

260 tons, I-beam spans, Caldwell county, Tex., to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, buildings, Souderton, Pa., to Kirby Iron Works, Iansdale, Pa.

240 tons, five story theater and office, Amarillo, Tex., to Mosher Steel & Machinery Co., Dallas, Tex.; 41 tons bars to Concrete Engineering Co., Omaha, Nebr., through C. S. Lambie Co.

220 tons, grade separation work for Grand Trunk railroad, between Twenty-third and Thirty-fourth avenues, Detroit, to McClintic-Marshall Corp., Bethlehem, Pa.

210 tons, garage, 348 West Twenty-seventh street, New York, to Frederick Steel Co., New York.

200 tons, high school, Paulsboro, N. J., to Bethlehem Fabricators Inc., Bethlehem, Pa.

200 tons, ward building, Vinita, Okla., to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla., through Manhattan Construction Co.

200 tons, sheet steel piling, substructure Northern Pacific railway bridge over Duwamish river, Seattle, to Pacific Coast Steel Co., Seattle, through General Construction Co., contractors, Seattle.

200 tons, highway bridge, Skellytown, Tex., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

200 tons, vocational school, Racine, Wis., to C. Hennecke Co., Milwaukee.

200 tons, school, Wakefield, Mich., to Worden-Allen Co., Milwaukee.

200 tons, Desloge hospital, St. Louis, to Columbia Iron Works, Cincinnati.

200 tons, addition to plant of Murray Corp. of America, Ecorse, Mich., to Whitehead & Kales Co., Detroit.

200 tons, Missouri Pacific railroad grade separation, Kansas City, Mo., to Kansas City Structural Steel Co., Kansas City.

200 tons, school, Union, N. J., to Hudson Structural Steel Co., Jersey City, N. J.

200 tons, south division high school gymnasium, Milwaukee, to C. Hennecke Co., Milwaukee.

200 tons, two state bridges, Foxboro, Mass., to New England Structural Co., Boston.

190 tons, Loneys lane bridge, Baltimore, to Fort Pitt Bridge Works Co., Pittsburgh.

180 tons, dirigible mooring mast, naval air station, Lakehurst, N. J., to Wellman Engineering Co., Cleveland.

175 tons, chemical plant for Stauffer Chemical Co., Los Angeles, to Consolidated Steel Corp., Los Angeles.

160 tons, gymnasium, service club, theater and library, Plattsburg, N. Y., constructing quartermaster, army, to Weatherly Steel Co., Weatherly, Pa.; Williams, Taylor & Mafera Corp., New York, contractor.

150 tons, monastery for Franciscan monastery, Garrison, N. Y., to Geo. L. Schnatz Iron Works, Bronx, N. Y.

125 tons, Pennsylvania state bridge,

Awards Compared

	Tons
Awards this week	**20,184**
Awards last week	**104,273**
Awards two weeks ago	**31,445**
Awards this week in 1930	**47,615**
Av. weekly awards, 1930	**35,242**
Av. weekly awards, 1931	**36,519**
Av. weekly awards, August	**20,024**
Total awards to date, 1930	**1,344,178**
Total awards to date, 1931	**1,351,186**

Bucks county, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa.

125 tons, bridge, Connecticut, to American Bridge Co., Pittsburgh.

125 tons, high school, Rutherford, N. J., to Hudson Structural Steel Co., Jersey City, N. J.

102 tons, shapes and bars, school, Springdale, Pa., to Keystone Engineering Co., Pittsburgh, and Metzger-Richardson Co., through M. J. Steffen, Natrona, Pa.

102 tons, postoffice, Hoboken, N. J., to Maxwell Spiro & Co., Jersey City, N. J., 70 tons reinforcing steel to Buffalo Steel Co., Buffalo; Quaker City Construction Co., Philadelphia, contractors.

100 tons, bridges, Shenango county, New York, to Lackawanna Steel Construction Co., Buffalo.

100 tons, apartment, Avenue A, Fifteenth to Sixteenth street, New York, to Claremont Iron Works, Bronx, N. Y., through Stuyvesant Housing Corp.

Contracts Pending

10,000 tons, Illinois bridge work including 2000 tons, approaches, bridge Peoria, Ill.

10,000 tons, supreme court office building, Washington; bids Oct. 21.

3500 tons, track and platform supports, Pennsylvania railroad, Philadelphia; bids in.

2000 tons, armory, Jersey City, N. J.; readvertised bids in.

1500 tons, postoffice, Miami, Fla.

1000 tons, 13 specifications, postoffice foundation work, Thirtieth street, Philadelphia; work expected shortly.

1000 tons, bridges, New York state.

1000 tons, Union club, New York.

1000 tons, miscellaneous bridge work, California.

900 tons, piling, Pyatuming dam, Jamestown, Pa.; C. R. Cummins Inc., Cleveland, low on general contract.

800 tons, plant, Philadelphia, for Consolidated Cigar Co.; bids Sept. 12.

800 tons, bridges, Massachusetts.

500 tons, school, Newark, N. J.

500 tons, factory, Edgewater, N. J.

350 tons, post office, Brownsville, Tex.; A. J. Rife Construction Co., Dallas, Tex., contractor. Work includes 80 tons reinforcing steel.

350 tons, building at Elsah, Ill., for Principia college, St. Louis.

250 tons, school, Pottsville, Pa.; Reindollar Contracting Co., York, Pa., contractor.

100 tons, East Cambridge, Mass., Third district court house addition.

Choose Intermediate Bars

Announcement is made by the Concrete Reinforcing Steel institute, Chicago, that the Philadelphia department of wharves, docks and ferries, and the Connecticut state highway department are among construction units which recently have approved the use of the intermediate grade as the standard grade of new billet reinforcing steel. These buyers have changed their specifications from the structural grade.

Revenue car loadings of American railways in 1926 showed an increase of 19 per cent over 1911, and was the highest point. In 1930 it had dropped to 3 per cent over 1911.

Concrete Bars

Radio City Reinforcing Steel, 3000 Tons, Is Awarded—Reopen Bids on Illinois Roadwork Involving $11,000,000—Week's Awards, 5649 Tons

REINFORCING BAR PRICES, PAGE 77

New York—Floor and roof mesh for the ten Radio City buildings, 3000 tons, has been placed with American Steel & Wire Co. Electric weld and triangle fabric mesh are included. Bids went in on several hundred tons for New Jersey bridges and highways. Bids will be asked next week on additional contracts for Triboro bridge anchorage construction, which will require several hundred tons. New York state highway and bridge work is heavier. Prices on small lots are fairly firm, but on larger tonnages concessions are made.

Boston—Of the 500 tons of reinforcing bars awarded, the largest lot was 230 tons for the underpass between Boston and Cambridge, placed with Joseph T. Ryerson & Son Inc. The new publishing house for the Christian Science Publishing Society calls for 600 tons of bars.

Philadelphia—Reinforcing bars are slightly firmer, with quotations of 1.60c, Pittsburgh, more prevalent. The market is now 1.51c to 1.61c, the more attractive tonnages taking the inside figure.

Cleveland—Over 1500 tons of concrete bars will be before the market again when contractors' bids are readvertised for Sept. 25 for the Nine Mile creek sewer, locally. Mill specifications and awards are in small lots. Pollak Steel Co. has taken 195 tons for Ohio state project No. 329. About 800 tons will go in Sept. 23 for a state grade elimination, Bedford, O.

Chicago—Bids will be reopened on about $11,000,000 in Illinois road and highway bridge contracts, as a result of a minimum wage rate set by governor's arbitration board. The work had been held up for readvertising because of protests submitted under the prevailing wage act of the last legislature. Due to the advanced season, much of the reinforcing bar shipments for these projects must be deferred until next esason, but contracts will be let this year. Billet bars are 1.60c to 1.80c. The Chicago postoffice award of 2500 tons is pending.

Awards Compared

	Tons
Awards this week	**5,649**
Awards last week	**7,245**
Awards two weeks ago	**4,816**
Awards this week in 1930	**4,797**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**6,961**
Av. weekly awards, August	**5,274**
Total awards to date, 1930	**252,708**
Total awards to date, 1931	**257,562**

Contracts Placed

3000 tons, reinforcing mesh including electric-weld and triangle mesh fabric, Radio City development, New York, to American Steel & Wire Co., Chicago, by Metropolitan Square Holding Corp.

500 tons, power development for James McLaren Co. Ltd., near Masson, Que., allocated among: Steel Co. of Canada Ltd., Hamilton, Ont.; Canadian Car & Foundry Co. Ltd., Montreal, Que.; Peck Rolling Mills Ltd., Montreal, Que., through Foundation Co. of Canada Ltd., Montreal, contractor. Sheet piling awarded Bethlehem Steel Export Corp., New York.

500 tons, postoffice, South Bend, Ind., to Concrete Engineering Co., Omaha, Nebr.

300 tons, additional, outer drive bridge, Chicago, to Concrete Steel Co., New York.

300 tons, superstructure federal building, Seattle, to Pacific Coast Steel Corp., Seattle, through Murch Bros. Construction Co., St. Louis.

230 tons, underpass, Cambridge, Mass., to Joseph T. Ryerson & Son Inc., Chicago.

200 tons, highway, Yonkers, N. Y., to Concrete Steel Co., New York, through A. W. Banko.

195 tons, 10-inch wrought iron, reinforcing pipe, roadway project No. 329, Ohio state department of highways, to Pollak Steel Co., Dayton, O., through Paul Nill, Dayton, contractor: lettting Aug. 21.

163 tons, building, Industrial Drinking Cup Co., Easton, Pa., to Kalman Steel Corp., division, Bethlehem Steel Co., Bethlehem, Pa.

150 tons, mesh, additional section, Daniel Webster highway, Merrimack county, N. H., to Wickwire Spencer Steel Co., New York; Amos D. Bridges Sons Inc., Hazardville, Conn., contractor.

150 tons, city printing plant, Boston, to Truscon Steel Co., Youngstown, O.

124 tons, highway, Hawthorne, N. Y., to Concrete Steel Co., New York, through A. W. Banko.

Contracts Pending

1600 tons, bridges, Morgan City and Krotz Springs, La.

(*Concluded on Page* 85)

Strip

Fourth Quarter Books Opened at Unchanged Prices—$2 Higher Quoted on Small Lots

STRIP PRICES, PAGE 77

Pittsburgh—Strip producers are opening fourth quarter books at prices unchanged from current levels except that on cold-rolled strip 2.25c is being quoted on less than carload lots, compared with the usual 2.15c market to larger buyers. Hot-rolled strip continues 1.55c and 1.65c. Incoming business shows a slight gain, some orders being received from consumers who have been out of the market for a number of weeks. Orders in all cases are for small lots and automotive tonnage still is light. One small lot has been placed by Ford but buying by this interest is slow. Mill operations were advanced during the past week to compensate for complete or partial shutdowns following the Monday holiday. Schedules average around 20 per cent for hot mills with cold strip output at several points less.

New York—While still lacking the stamp of an official pronouncement, indications point more clearly to a reaffirming of existing prices on strip steel for fourth quarter. Hot-rolled is 1.55c, Pittsburgh, for wide and 1.65c, for narrow. Cold-rolled is 2.15c Pittsburgh. Trading still is quiet.

Philadelphia—Hot-rolled strip is 1.55c to 1.60c, Pittsburgh, and cold-rolled 2.15c. The trade looks for reaffirmation of these levels for fourth quarter.

Youngstown, O.—A small volume of specifications for strip is coming to mills. One important valley maker finds this week's operations very uncertain. Prices of narrow and wide strip are firm.

Cleveland—September brings an increased volume of hot-rolled strip inquiry from a variety of consumers. Prices are holding at 1.55c and 1.65c, Pittsburgh base, for wide and narrow strip and cold-rolled is 2.15c, minimum, Cleveland, with a higher figure quoted on some orders. Strip prices for fourth quarter are withheld, but reaffirmation of current levels is expected.

Chicago—Aside from heavier automotive releases late this month and in October, little is scheduled for hot-rolled strip mills. Miscellaneous manufacturing demand shows no improvement. Operations are about 30 per cent. Wide material is quoted at 1.65c, and strip under 6 inches, 1.75c, Chicago. Recent sales of cold-rolled strip have been made on the basis of 2.15c, Pittsburgh-Cleveland. Cold strip contracting is light.

Operations at 28 Per Cent As Holiday Interrupts

Youngstown, O.—Steel operations declined 16 points to 28 per cent of capacity for the first half of the week, due to Labor day suspensions in several plants. Republic Steel operations continue at 35 per cent. Youngstown Sheet & Tube schedule is barely over 20 per cent capacity with finishing mill output a little higher than the rate of steel production. Carnegie Steel activity is somewhat lower at 35, while Sharon Steel Hoop Co. operates its three plants at 30 to 35 per cent.

	Per Cent
Operations this week	28
Operations last week	31
Operations two weeks ago	32
Operations this week, 1930	55
High for 1931, (March 19)	57
Low for 1931, (Sept. 8)	28

Philadelphia—Ingot production in eastern steel mills is unchanged this week at 30 per cent of capacity. The leading interest in this section is continuing at 31 per cent.

Pittsburgh—Ingot production on a weekly basis is down one point to 29 per cent as a result of the holiday, while blast furnace schedules have increased slightly with one more steelworks stack active. This places 11 to 54 in blast. Sheet output holds at 30 to 35 with tin plate 45 to 50. Strip continues around 20 with pipe lower at 25 to 30 per cent.

Cleveland—Ingot output has gained four points this week to 33 per cent, with active open-hearth furnaces now numbering 11 of a potential 34 units. Operations were little affected in district plants by the recent holiday.

Chicago—Ingot production in the week just closed averaged 25 to 27 per cent, down three to five points, due to the general closing down from Sept. 6 to 9. Resumption was at about 30 per cent. Finishing mill operations are similar to a week ago, averaging a little more than 30 per cent. Nine of the district's 36 steelworks blast furnaces are active, five of these being stacks of the leading interest.

Birmingham, Ala.—Six or seven open-hearth furnaces out of 23 are continued in operation, placing operations at 28 per cent of capacity. Eight blast furnaces are making iron.

Warehouse Demand in Slight Upward Tendency

Warehouse Prices, Page 99

New York—Slight improvement in steel warehouse volume is noted by some jobbers, who expect September business to show a gain over August. Buying is well spread and prices fairly firm, although some shading continues. Sheet demand is light, but steady. Cold finished products are unchanged.

Boston—Warehouses expect to benefit mildly from a moderate expansion in construction and repair work. Prices generally are unchanged.

Philadelphia—While the new month started off slowly, jobbers are contemplating a steady pickup to reach its peak in October. Prices are unchanged.

Baltimore—While local warehouse business is not good, general trading is slightly better. Sentiment is mixed as to the outlook in September. Prices are unchanged.

Buffalo—Warehouses feel that the outlook for sales this week can be regarded as perhaps more promising than in any time within the past 60 days.

Pittsburgh—Seasonal improvement is lacking, while August business showed little change from that of July. Prices generally are steady, but there is occasional shading.

Cleveland—While movement still remains on a low level, August shipments of steel from warehouses showed a slight increase over July. Orders are from diversified sources. Prices are holding unchanged.

Cincinnati—With the passing of Labor Day, jobbers showed anxiety as to what trend would be developed this month. Tonnage was off slightly last week. Prices are steady.

Chicago—Warehouses announce a 3 per cent reduction in the price of machine and carriage bolts, lag screws, bolt ends, hot pressed and hexagon semifinished nuts in keg lots, effective at once. This follows a reduction from 60, 10 and 10 off to 70 per cent off on Aug. 15. The discount now is 73 per cent, except for nuts in less-keg lots, 63 off.

Concrete Bars Pending

(*Concluded from Page* 81)

1200 tons, Cook county nurses' home, Chicago, purchase of bars postponed for three weeks; Mutual Construction Co., Chicago, general contractor.
875 tons, school, Fifty-ninth street, Philadelphia; John McShain, Philadelphia, low on general.
800 tons, state grade elimination, Bedford, O.; bids Sept. 23.
600 tons, publishing house for Christian Science Publishing Society, Boston.
500 tons, sewers, Chicago sanitary district.
500 tons, two bridges, Union City, N. J.
200 tons, apartment, Stanley and Hollywood boulevard, Los Angeles; bids being taken.
185 tons, Los Angeles, work on Los Angeles river; bids Sept. 14.
125 tons, highway, Prospect street, Dover, N. J.; bids Sept. 16.
125 tons, school house, Boston.
100 tons, school, Englewood, N. J.
100 tons, highway, Sylvania avenue, Neptune City, N. J.; bids Sept. 16.

Ore Tax Per Ton Goes Up As Shipments Drop

All taxes paid by Minnesota iron mine operators in 1930 amounted to $20,735,645, equivalent to 59.6 cents per ton, according to the Lake Superior Iron Ore association, in its Directory, recently issued. Figured on a ton basis, the tax will show a considerable increase for 1931, as most of the tax is on the property, and is fixed regardless of the amount shipped. The property tax in 1930 was $17,085,645. The occupation tax, which varies according to tonnage, was only $2,800,000, and the estimated royalties, $850,000.

The total tax bill was nearly the same as the $20,423,485, paid in 1921, when shipments were only half as large as in 1930. The tax in 1921 was equivalent to $1.15 per ton, and it is likely to be near this figure for 1931.

In Michigan the state and local tax in 1930 was $3,514,532, constituting practically all of the taxes paid. This was equivalent to 31.5 cents per ton of ore shipped. In 1921, the tax was equivalent to 82 cents a ton, and the low rate of output this year will mean another high average for each ton shipped.

Recovery of Nonferrous Metals Off in 1930

Value of nonferrous metals recovered from secondary sources in 1930 is reported to the United States bureau of mines, department of commerce, as $193,255,100, which is $137,773,800 less than in 1929.

The total quantity decreased 24 per cent. The decrease in value was partly due to the lower yearly average prices of copper, lead, zinc, tin, and antimony in 1930. There were, moreover, large decreases in the quantity of each of the secondary metals recovered.

Shipments of scrap copper and brass to Europe declined, and the imports were less in 1930 than in 1929. The smelters that treat mainly primary material produced 26,809 tons less secondary copper in 1930 than in 1929.

Probes Profit on Cement

Washington—Continuing its investigation into price bases, the federal trade commission has sent to manufacturers of cement a schedule asking for costs and profits. This is in connection with the general study the commission is making into the establishment of base prices of various commodities, especially to ascertain facts relative to bidding on government contracts.

Codes of 101 Cities Permit Welding of Buildings

A new building code recently adopted by Rochester, N. Y., includes permission to weld steel building frames in accordance with the American Welding society's "Code for Fusion Welding and Gas Cutting in Building Construction." This brings the total number of cities and town which permit the use of welding to 101.

Pipe

Cast Prices Ease Further—12,000 Tons Steel or Concrete Up for Lincoln, Nebr.

PIPE PRICES, PAGE 99

Chicago—Only fair private business is resulting in cast pressure pipe. Shipments are being completed on most of the season's municipal laying programs. Muskegon, Mich., has awarded 31,000 feet of 6, 10 and 12-inch pipe. Milwaukee will take bids, Sept. 11, on 1500 tons of large size lug pipe. Delivered prices are easy on attractive municipal work.

Boston—Pipe contracts continue to show little improvement. Prices continue weak, it being reported that less than $30 a ton was done for carlots.

New York—A fair volume of cast pipe is up on which bids are in, but fresh inquiry has slumped. Low prices continue to cloud the market, some of the lowest quotations in a long period being submitted.

Pittsburgh—Standard pipe demand has failed to show a seasonal expansion. Line pipe activity is expected to be dull over the remainder of the year with few outstanding inquiries remaining.

Action on the Stanolind Pipe Line Co. project is expected to be taken shortly.

Birmingham, Ala.—Pipe production is around 40 per cent of capacity. Lettings have been scattered, total business placed light.. Further price concessions are heard.

Cast Pipe Placed

31,000 feet, 20,000 feet of 6-inch and 5500 feet of 10-inch for Muskegan, Mich., to McWane Cast Iron Pipe Co., Birmingham, Ala., and 4500 feet of 12-inch to Alabama Pipe Co., Birmingham, Ala.
580 tons, 12 to 24-inch, treasury department, Washington, to R. D. Wood & Co., Florence, N. J.
200 tons, 6 to 8-inch, Racquette Lake, N. Y., to Central Foundry Co., New York.

Steel Pipe Placed

450 tons, line from Ashtabula, O., to Conneaut, O., for Lake Shore Gas Co., Ashtabula, to Youngstown Sheet & Tube Co., Youngstown, O.
400 tons, 36 to 75-inch welded steel pipe, Hetch Hetchy project, San Francisco, to Steel Tank & Pipe Co., Berkeley, Calif.

Cast Pipe Pending

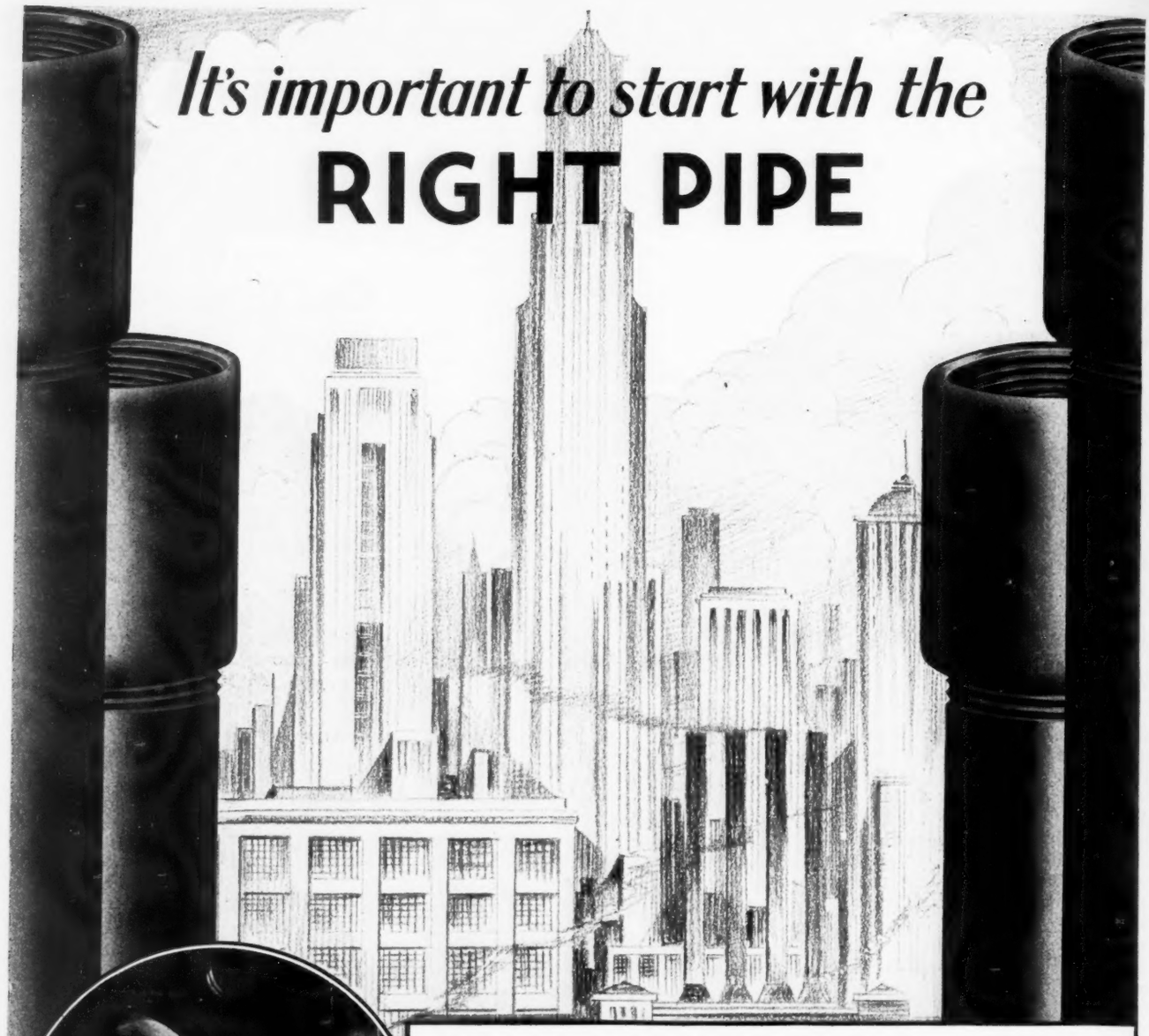
1960 tons, 24, 36, 48 and 54-inch water pipe, Milwaukee; bids close Sept. 15.
1500 tons, large size lug pipe for Milwaukee; bids Sept. 11.
350 tons, 8 to 16-inch, Seattle water improvement project; general contract bids Sept. 4.
319 tons, 6-inch class 150, Mill Valley, Calif.; bids to be called soon.
Unstated tonnage, 2930 feet, various sizes, water main extension, Ft. Meade, Md.; Charles J. Spielman Co., low.

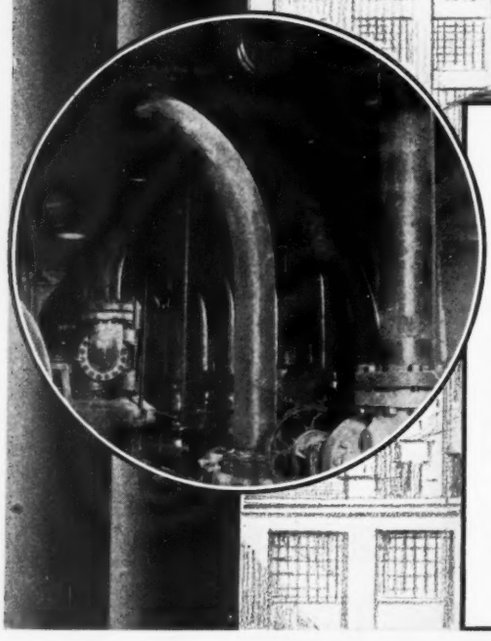
Steel Pipe Pending

12,000 tons, 136,000 feet of 36-inch welded, lock-bar or reinforced concrete pipe, Lincoln, Nebr., bids Sept. 22.
Unstated tonnage, 27,000 feet, 2-inch butt welded black steel and oxy-acetylene welded pipe and 8000 feet, 2-inch, Central Illinois Electric & Gas Co., Rockford and Pecatonica, Ill.; United Engineers & Constructors, contractors.
Unstated tonnage, approximately 1000 feet 20-inch pontoon pipe and 19½ and 8-inch steel suction pipe, for army engineers, New York.

It's important to start with the

RIGHT PIPE





Higher pressures and higher temperatures are constantly imposing new standards of quality upon pipe. Likewise, sudden changes in temperature or in other operating conditions, subject the metal to more rigid tests. Bends, coils and cross-overs also add to the severity of service requirements—for good working quality at the moment and for stamina thereafter.

NATIONAL Pipe is a progressive pipe—its quality is constantly being improved to meet advancing practice. Care and skill in installation deserve the right pipe—therefore, be sure to specify NATIONAL, and start with the right pipe—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY · PITTSBURGH, PA.

Subsidiary of United States Steel Corporation

NATIONAL PIPE

Railroads

Releases Still Active at Chicago —Pending Cars, with One Exception, Lowest Since 1921

TRACK MATERIAL PRICES, PAGE 77

New York—Fresh car inquiry remains small. Sellers estimate that not more than 100 freight cars are pending throughout the country and claim that most of these are not likely to be placed soon. Were it not for the local board of transportation subway car inquiry for 300 to 1500 units, noted in previous issues, and on which bids are to be opened Sept. 25, the market would be by all odds the flatest since 1921. Locomotive inquiry also is stagnant.

Army engineers, Washington, open bids Sept. 17 on 50 tons of 70-pound rails and 5000 tie plates.

Following are monthly comparisons of freight car awards showing August bettering July:

	1931	1930	1929	1928
Jan.	100	5,072	13,196	4,160
Feb.	50	17,027	15,944	10,220
March	2,166	6,118	12,023	2,958
April	2,798	1,997	8,205	6,043
May	20	1,392	7,562	2,531
June	1,910	998	5,886	2,422
July	367	1,389	341	582
Aug	1,104	1,111	2,854	677
8 mo.	8,515	35,104	66,011	29,593
Sept.	.....	576	4,517	1,378
Oct.	.....	4,116	19,506	2,853
Nov.	.....	2,621	6,361	6,140
Dec.	.....	2,729	9,710	4,799
Total	.....	45,146	106,105	44,763

Pittsburgh—Railroads again are taking but little material, following a slight gain in releases recently. New business is lacking since considerable material remains to be shipped against old orders and inquiry also is lacking. Light rails are in poor demand by industrial users with the market usually $34.

Cleveland—Rail orders for 1932 delivery will come considerably later this year than last. Several interests that have ordered out rails early this year have as yet to lay them, thus further obviating fresh purchases. Rail accessories are quiet. Erie railroad will have its refrigerator car requirements furnished by the General American Tank Car Corp., negotiations having been recently completed.

Chicago—More active releases that have characterized the railroad trackage steel market for the last three weeks continue. About 3000 tons has been added to September rail releases, while track fastenings specifications in a number of small lots amount to 1500 to 2000 tons. Rails on September books are scheduled for early rolling. Several railroads have just put out inquiries for fourth-quarter bar, shape and plate requirements. A number of the western freight car shops are specifying finished steel material for repair work, including the material for repairs to 1000 Chesapeake & Ohio cars.

Car Orders Placed

Guantanamo & Western, Cuba, five pony trucks, to be applied to rail car chassis, through J. G. Brill Co., Philadelphia, to Mack-International Motor Truck Corp., New York.

Locomotives Pending

Navy department, Washington, for San Diego, one gasoline-driven locomotive, bids Sept. 29.

Belgian Wire Cargoes at Chicago; Some Gains Made

Wire Prices, Page 77

Chicago—Wire mill production dropped off sharply over the week-end, but resumed after the holiday at about 20 to 25 per cent. Virtually no inquiry for fourth quarter merchant or manufacturers wire products has occurred. No test is being given to prices, although recent sales of fencing material have been made on the basis of 2.60c and 2.70c, Chicago or western mill, for galvanized barbed wire, and 2.40c to 2.50c for annealed fence wire. The British steamer, DEWSTONE, has arrived in the Chicago habor from Antwerp, Belgium, with a cargo of 2050 coils of galvanized wire netting, and 10,500 reels of galvanized barbed wire for Sears, Roebuck & Co., Chicago. Receipt of this cargo follows the recent arrival of the Swedish steamer, ANNA, with about 700 tons of wire products for Montgomery Ward & Co., Chicago, also shipped from Belgium.

Worcester, Mass.—Wire is making a slight increase in production. Most plants took advantage of the holiday week end to shut down for three days.

New York—Wire sellers find conditions dull. Wire nails are $1.90, Pittsburgh, and plain bright wire 2.20c, Pittsburgh. Both prices are likely to be reaffirmed.

Pittsburgh—A slight seasonal gain is noted in demand for wire products from jobbers. The improvement is small and partly offset by continued quiet in demand for manufacturers' wire. The market is steady at $1.90 to jobbers for wire nails, with plain wire continuing 2.20c and wire rods $35.

Cleveland—A moderate betterment in wire products' sales has been effected since the turn of September and has been backed by improved sentiment in the trade. Prices remain unchanged with anticipation of announcement of fourth-quarter asking levels the latter part of this week.

Large Rivets Off $5 Ton; Bolts and Nuts Quiet

Bolts, Nuts, Rivets Prices, Page 77

Pittsburgh—Large rivets have been reduced $5 a ton to 2.50c, Pittsburgh and Cleveland, and 2.60c, Chicago and Birmingham, Ala., effective Sept. 9. No change is announced in small rivets. Improvement in demand for bolts and nuts still is lacking. August business was slightly smaller than that of July.

New York—Bolts and nuts are relatively steady at 73 and 10 off, with little attractive tonnage being figured. Rivets are unchanged at 2.75c, Pittsburgh, Eastern mills are still operating at 25 to 30 per cent of capacity.

Philadelphia—One eastern mill has opened its books for fourth-quarter bolts and nuts at 73 and 10 off list. Buying is spotty. Rivets are steady at 2.75c, Pittsburgh.

Cleveland—Effective Sept. 9 large rivets are 2.50c, Cleveland. Prices of small rivets are unchanged. Bolts and nuts are continued at 73 and 10 off list.

Chicago—Prices for bolts, nuts and rivets will be subjected to more rigid tests this week and next, as regular buyers are being solicited for fourth quarter contracts. Specifications show no improvement and operations remain at about 30 per cent. Some sales of small rivets, 7/16-inch and smaller, have been made on the basis of 70, 10 and 5 off.

Imported Fluorspar Market Is Easier

Fluorspar Prices, Page 88

New York—While there is little business to test the market, imported fluorspar is nominally easier at $18.50, duty paid, per gross ton, 85 and 5 per cent. The $19 price has virtually disappeared. Sellers are looking for a slight improvement.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	16.76 to 17.26
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.90 to 20.40
Buff., all-rail Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.00 to 16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.90 to 21.40
Buffalo, all-rail Newark	18.78 to 19.28
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.25
Eastern, del. Phila.	17.26 to 17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	17.76 to 18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.41
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63
Eastern Penn., del.	16.75
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	25.04

SILVERY

Jackson County, O., fur. in per cents: 6—$20; 7—$20.50; 8—$21; 9—$21.50; 10—$22; 11—$23; 12—$24; 13—$26.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—$23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.40 to 2.50
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	8.50
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	8.50 to 9.00
Newfoundland fdy., 55%	8.50
Tungsten, spot and future short ton unit, duty paid	$11.25 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52%	26 to 28 cents
South African, 49-51%	25 to 26 cents
South African, 44-47%	24 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	22 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$40.00
Georgia, Alabama	40.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00
Pittsburgh, bessemer	29.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00
Forging, Philadelphia	39.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

•Ferromanganese, 78-82%, tidewater, duty paid	$85.00
•Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent, per lb.	$1.00
Cal. Molybdate, lb. cont.	.85

†Carloads. Differentials apply to quant.
•To users of carloads to 500 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.00
Washed gravel, import duty paid east. tide, gross ton	18.50

What has happened to TIME that tough old tester?

FROM many quarters, the query has come—"What has happened to Time, that Tough Old Tester, who made his bow to the world in Reading Iron Company advertising?" You'll know the answer soon!

Time, who has proved the greater endurance of Reading Puddled Iron Pipe through nearly a century, is still the best possible witness that Reading Pipe resists rust, corrosion, strain and electrolysis as does no other. For leading engineers agree that only Time's Test proves pipe values — and only Puddled Iron Pipe such as Reading makes has successfully passed all the Tests of Time.

Responding to many requests, Time, that Tough Old Tester, is planning to return to these pages. Watch for his next appearance—he has some valuable pipe pointers for *you!*

For information and quotations address

READING IRON COMPANY

READING, PENNSYLVANIA

Atlanta, Baltimore, Boston, Buffalo, Pittsburgh, Cincinnati, New York, Detroit, Houston, St. Louis, San Francisco, Seattle, Chicago, Philadelphia, Tulsa, Los Angeles, Kansas City

Reading Products: Pipe . . Tubing . . Casing . . Sucker Rods . . Nipples . . Couplings . . Bar Iron . . Blooms . . Cut Nails . . Boiler Tubes.

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READING PUDDLED IRON PIPE

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

Pig Iron

Better Outlook for Shipments This Month — Sales Small— Lake Superior Charcoal Down

PIG IRON PRICES, PAGE 88

Pittsburgh—No signs of improvement in demand for pig iron are appearing. Inquiry is lacking, while new business usually is restricted to single carloads. Shipments continue at a low ebb. Prices are unchanged, but are practically untested.

Boston—Foundries continue to buy only small lots of pig iron and there is no indication of an early improvement. Total orders in the past week fell slightly below 1000 tons.

New York—Pig iron sales are light, though sellers are confident of improvement this month. Little definite inquiry is being figured. Buffalo iron is unchanged at $15 to $15.50, furnace, for shipment in this territory, and southern iron is unchanged at $16.50, New York docks.

Philadelphia—The market is slow. Eastern Pennsylvania iron is unchanged at $16.76 to $17.26, delivered, Philadelphia. Southern makers hold to $11, base, Birmingham, though a reduction of 25 cents in freight by way of Mobile was passed on to consumers. Southern iron is $16 to $16.25, delivered, Philadelphia, depending upon the route of shipment.

Youngstown, O.—Pig iron purchases are merely sufficient to cover immediate needs. No. 2 foundry, malleable, basic and bessemer continue $17, base, valley. Small lots of standard coppr-free, low phosphorus iron move at $27, valley.

Cleveland—Shipments continue to increase moderately but new business remains light, with few inquiries for fourth quarter. Sales by Cleveland furnaces were lower in the past week, at approximately 4000 tons. Prices hold at $17, base, furnace, for local delivery, and generally $16, base, for outside shipment by lake furnaces, in western and southern Ohio and northern Indiana.

Cincinnati—An inquiry for 700 to 1000 tons of southern iron by an Indiana melter may test the quotation of $11, base, Birmingham. Foundries' stocks are so light that a seasonal increase in the melt is expected to bring them into the market. Sales in the week totaled 1500 tons.

Chicago—Several carload orders have been placed in the last few days. Prospects are improving for resumption by several gray iron foundries in this district late in the month. Northern base grades are nominal at $17.50, Chicago furnace.

Several small lots of steelworks iron, accumulated over the holidays, are being released to the merchant trade at 25 to 50 cents under the market. Four hundred tons of southern iron was sold, and 500 tons are pending.

Lake Superior charcoal pig iron has been reduced $2 a ton to $25.04, delivered, Chicago.

St. Louis—Specifications have picked up and September shipments will be well ahead of the August average. Some inquiries have developed for fourth quarter, and furnaces are offering to negotiate on the basis of present prices.

Birmingham, Ala.—The concession of 25 cents under the $11, base, price, for Philadelphia and other eastern points, reported last week, is accounted for by routing shipments through Mobile, by rail and water, giving that margin on freight rates. Sales and output are the lowest in many years.

Toronto, Ont.—Inquiry and sales are lighter, less than 500 tons being booked in the week.

Ferroalloy Shipments Show Little Improvement

Ferroalloy Prices, Page 88

Pittsburgh—Ferroalloys shipments show little change, September to date witnessing only a continuation of the quiet August movement. Demand in the spot market has been equally dull, with most orders applied against contracts. Prices are unchanged at $89.79, delivered, for ferromanganese and $30, furnace, for spiegeleisen. Ferrotungsten continues around $1.05.

New York—Ferromanganese is quiet at $85, duty paid, in carlots. Sellers look for a slight improvement later in the month. Domestic spiegeleisen, 19 to 21 per cent, is nominally $30, furnace.

Semifinished Steel Orders Continue Small

Semifinished Prices, Page 88

Pittsburgh—Continued light operations of finishing mills hold demand for semifinished steel at a low rate. Orders are for small lots for prompt requirements since consumers are carrying little stock. New business usually is placed at $29 for rerolling billets, slabs and sheet bars, wire rods continuing $35. Some reports are heard of a possible advance in prices in view of recent increases in some finished products although no announcements are forthcoming from producers.

Youngstown, O.—The low rate of operations at sheet and strip mills precludes much current buying of sheet bars and billets. Billets, sheet bars and slabs bring $29, Youngstown and Pittsburgh.

Cleveland — Though the leading merchant producr here continues to operate only four of its 14 open hearths, shipments of sheets bars, billets and slabs, gained slightly in the past week. Prices hold at $29, base, Cleveland and Youngstown, O.

Financial Notes of Steel And Iron Industry

YOUNGSTOWN SHEET & TUBE CO., Youngstown, O., has omitted the quarterly dividend on the common stock due on Oct. 1, but has declared the regular quarterly dividend of $1.37½ on the preferred stock.

□ □ □

General Steel Castings Corp., Eddystone, Pa., and Granite City, Ill., has passed its preferred dividend after a report indicating a deficit, after fixed charges, of $1,481,000 for the first seven months of 1931.

□ □ □

McKeesport Tin Plate Co., McKeesport, Pa., declared the regular quarterly dividend of $1 a share, payable Oct. 1. to record of Sept. 15, but took no action on continuing the extra payments in force since early 1930.

□ □ □

Superior Steel Corp., Pittsburgh, reports net loss of $241,037 for the first half compared with loss of $182,359 for the similar period of 1930. Net loss for the second quarter of 1931 was $96,600; for the same quarter a year ago, $108,979.

Save $5,000,000 a Day

In the first five months of 1931 railroad operating and capital expenditures were reduced an average of $5,000,000 for each working day, compared with similar expenditures in 1929, states John M. Fitzgerald, vice chairman, committee on public relations of eastern railroads.

Scrap

Static Dullness Prevails in Trading and Prices—Chicago Ships Turnings by Lake

Chicago—Aside from continued activity in cast iron borings, scrap grades are quiet. August billings were the lowest of the summer. A cargo of about 4000 tons of borings has just left East Chicago docks for a Lake Erie port. While more borings are being accumulated at the docks, they are unsold and some question remains as to whether another cargo, the third for the season, will be moved before the close of navigation. Borings and turnings are being shipped by rail to Newport, Ky., while turnings are being shipped to Kokomo, Ind. The price is being held relatively high because of low borings production. Heavy melting steel remains quiet at $8 to $8.50.

Boston—While there seems to be

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.50 to 8.50
Boston, dealers	4.50 to 5.00
Buffalo, No. 1	9.00 to 9.50
Buffalo, No. 2	7.75 to 8.25
Chicago	8.00 to 8.50
Cinci., deal.	7.25 to 7.75
Cleve., No. 1	8.50 to 9.00
Cleve., No. 2	7.50 to 8.00
Det., No. 1 deal.	7.00 to 7.50
Det., No. 2 deal.	5.50 to 6.00
E. Pa. del. mill	8.00 to 9.00
N. Y. deal. R. R.	5.00 to 6.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	4.00 to 4.50
Pitts., No. 1	10.50 to 11.50
St. L. No. 1 sel.	8.00 to 8.20
Federal, Ill.	7.75 to 8.25
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	10.50 to 11.00

COMPRESSED SHEETS

Buffalo, dealers	7.75 to 8.25
Chi., (Factory)	7.00 to 7.50
Cleveland	7.50 to 7.75
Detroit, dealers	6.50 to 7.00
E. Pa. new mat.	8.00 to 9.00
Pittsburgh	10.50 to 11.00
Valleys	10.00 to 10.50

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cinci., deal.	6.75 to 7.25
Cleveland	6.50 to 7.00
Eastern Pa.	6.50 to 7.00
Pittsburgh	9.50 to 10.00
St. Louis	5.00 to 5.50

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.00 to 4.50
Detroit, dealers	3.50 to 4.00
St. Louis	5.00 to 5.50

STEEL RAILS SHORT

Birmingham	10.75 to 11.50
Boston, dealers	3.00 to 4.50
Buffalo	12.00 to 12.50
Chicago (3 ft.)	10.00 to 10.50
Chicago (2 ft.)	10.75 to 11.25
Cinci., deal.	12.50 to 13.00
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	6.50 to 7.50
Boston, con.	5.00 to 5.50
Buffalo	8.25 to 8.50
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50 to 8.00
N. Y., deal. mill	4.75 to 5.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	11.00 to 11.50
Chicago	9.25 to 9.75
Eastern Pa.	13.00
Pittsburgh	12.00 to 12.50
St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	9.25 to 9.75
St. Louis	7.50 to 8.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.75 to 13.25
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	13.50 to 14.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts. sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	8.50 to 9.00
St. Louis	8.50 to 9.00

SHOVELING STEEL

Chicago	8.00 to 8.50
Cleveland	6.50 to 7.00
St. Louis	7.75 to 8.25

RAILROAD WROUGHT

Birmingham	7.50 to 8.50
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	9.00 to 9.50
Chicago, No. 1	8.00 to 8.40
Chicago, No. 2	8.00 to 8.50
Cinci., No. 2	7.25 to 7.75
Eastern Pa.	9.50 to 10.00
N. Y., No. 1, deal.	9.00 to 9.50
Pitts., No. 2	10.50 to 11.00
St. Louis, No. 1	5.00 to 5.50
St. Louis, No. 2	7.75 to 8.25

SPECIFICATION PIPE

Boston	5.00 to 5.25
Eastern Pa.	10.00 to 10.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	7.75 to 8.25
Chicago, No. 1	6.75 to 7.25
Cinn., No. 1 dl.	6.00 to 6.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	6.25 to 6.75
Det., No. 1 new deal.	5.50 to 6.00
St. L., No. 1	6.00 to 6.50
Val. new No. 1	9.50 to 10.00

MACHINE TURNINGS

Birmingham	3.50 to 4.50
Boston, dealers	1.50 to 1.75
Buffalo	4.75 to 5.25
Chicago	4.25 to 4.75
Cinn., deal.	3.75 to 4.25
Cleveland	5.00 to 5.50
Detroit	4.00 to 4.50
Eastern Pa.	5.00 to 6.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00
St. Louis	3.00 to 3.50
Valleys	8.00 to 8.25

BORINGS AND TURNINGS For Blast Furnace Use

Boston	1.50 to 1.75
Buffalo	6.00 to 6.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, deal.	4.75 to 5.25
Eastern Pa.	5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.50
Boston, chem.	7.00 to 7.25
Boston, deal.	1.50 to 1.75
Buffalo	6.00 to 6.50
Chicago	4.00 to 4.50
Cinn., deal.	3.75 to 4.25
Cleveland	6.50 to 7.00
Detroit, deal.	4.75 to 5.25
Eastern Pa.	5.00 to 6.00
E. Pa., chem.	10.50 to 12.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	5.50 to 6.00
Eastern Pa.	7.50 to 8.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	7.50 to 8.00
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.50 to 6.00

FORGE SCRAP

Boston, del.	5.00 to 5.25
Chicago	11.00 to 11.50
Eastern Pa., del.	8.00 to 8.50

ARCH BARS, TRANSOMS

Chicago, net	9.00 to 9.50
St. Louis	7.75 to 8.25

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.50 to 8.00
Chi., steelworks	7.00 to 7.50
Cleveland	6.75 to 7.00
Eastern Pa., del.	7.50 to 8.50
Pittsburgh	9.50 to 10.00
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	14.50 to 15.00
Chicago	12.90 to 13.45
Eastern Pa.	18.50 to 19.50
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	8.95 to 9.50
N. Y., deal.	9.00 to 9.50
St. Louis	9.00 to 9.50
E. Penna.	18.00

CAR WHEELS

Birming., iron	8.50 to 9.50
Boston, iron	14.00 to 14.50
Buffalo, iron	10.50 to 11.00
Buffalo, steel	11.00 to 11.50
Chicago, iron	9.50 to 10.00
Chi. rolled steel	9.50 to 10.00
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	10.50 to 11.00
E. Pa. iron	12.50 to 13.00
Pitts. iron	11.00 to 11.50
Pitts., steel	12.50 to 13.00
St. Louis, iron	7.00 to 7.50
St. Louis, steel	8.50 to 9.00

NO. 1 CAST SCRAP

Birmingham	8.50 to 9.50
Buffalo (mach.)	10.00 to 10.50
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	12.50 to 13.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L., No. 1 ma.	8.50 to 9.00
St. L. No. 1	7.50 to 8.00

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	11.50 to 12.50
Buffalo, break	6.50 to 7.00
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.50 to 6.00
Eastern Pa.	10.00 to 10.50
N. Y. No. 1 dl.	7.00 to 7.50
N. Y., break, dl.	6.50 to 7.00
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	10.00 to 10.50
Chicago, agri.	8.00 to 8.50
Chicago, R. R.	8.50 to 9.00
Cinci., R. R. del.	10.25 to 10.75
Cinci., agri. del.	10.00 to 10.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.50 to 10.00
St. Louis, rail	6.75 to 7.25

RAILS FOR ROLLING 5 feet and over

Birmingham	10.50 to 11.00
Boston	7.50 to 8.00
Buffalo	10.00 to 10.50
Chicago	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
New York	7.00 to 7.50
St. Louis	10.50 to 11.00

LOCOMOTIVE TIRES

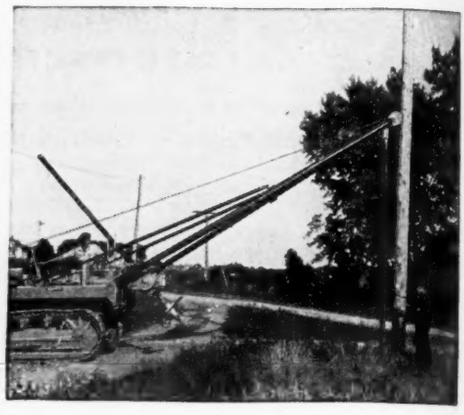
Chicago, cut	11.00 to 11.50
St. L., No. 1	9.50 to 10.00

LOW PHOS. PUNCHINGS

Chicago	10.75 to 11.25
Buffalo	12.50 to 13.00
Eastern Pa.	13.00 to 14.00
Pittsburgh	13.50 to 14.00

Strong, Tough Gears and Pinions of Vanadium Steel Insure Dependability

Of This Hole Borer and Pole Setter



HIGHWAY Earth Boring Machines and Pole Setters, built by Highway Trailer Company, Edgerton, Wisconsin, are often called upon to work in gravel and stony soils. Stones and other obstructions can seldom be avoided, for their presence is usually unknown until the boring auger strikes them. Obviously, the sudden impact exerts severe shock and strain through the machine and its auxiliary transmission, particularly upon gears and pinions.

To meet these severe conditions, Highway Trailer Company sought a gear steel of high strength and durability—a steel that would provide high surface-hardness and a tough core. The compact design of the machine and auxiliary transmission limited the available gear space, thus adding to the complexity of the problem.

Vanadium Steel was selected by Highway Trailer Company. It is used in the gears and pinions of the Highway Earth Boring Machine, and in the gears of the auxiliary power transmission. Its service has been marked by long life and unusual dependability.

Are you interested in better steels for gears, pinions, shafts or other vital parts of your products? Let our Metallurgists send you complete information on Vanadium Steels of proved superiority and dependability. Write us today.

VANCORAM

FERRO-ALLOYS of vanadium, silicon, chromium and titanium; silico-manganese, tungsten and molybdenum, produced by the Vanadium Corporation of America, are used by steel makers in the production of high-quality steels.

VANADIUM CORPORATION OF AMERICA

120 BROADWAY, NEW YORK, N. Y.

CHICAGO *Straus Bldg.* PITTSBURGH *Oliver Bldg.* DETROIT *Book Tower*

Plants at Bridgeville, Pa., and Niagara Falls, N. Y.

Research and Development Laboratories at Bridgeville, Pa.

VANADIUM STEELS

for strength, toughness and durability

a little better sentiment in the scrap market, orders are lacking. The fact that some material went to Pittsburgh the preceding week gave some hope, but last the only material shipped was hydraulic bundles at the price of heavy melting steel, $10.50 delivered. Prices are unchanged.

Philadelphia—An advance of 50 cents in chemical borings represents the only change in steel and iron scrap. General demand is listless. A consumer at Claymont, Del., continues to restrict shipments. Sellers expect little improvement before the end of the month.

Bids will be opened at the Philadelphia navy yard, Sept. 14, on 13,763 tons of scrap iron and steel, 488 tons of nonferrous scrap, 2572 tons of armor plate and motors from five obsolete submarines. Scrap metal was obtained in dismantling the cruiser PUEBLO, the battleship FLORIDA and in modernization of the battleship NEW MEXICO.

Pittsburgh—Steel and iron scrap is generally quiet but heavy melting steel is up 25 cents on limited buying. One mill paid $11.50 for railroad quality although the ordinary grade sold no higher than $11 and the market has the full range of $10.50 to $11.50. Scrap offered by the Pennsylvania railroad brought slightly less than $11.50. Bundled sheets also are stronger but most grades are quiet and unchanged.

Detroit—Prices of steel and iron scrap are unchanged except for a few small adjustments of grades not actively traded. Continued quiet in automotive lines holds production at a low level, and demand is equally small.

Cincinnati—Heavy melting steel, after being nominally unchanged for many weeks, reacted to the dull market and dropped 25 cents, with decreases in some other items on adjustment to recent small transactions.

Cleveland—The market here continues quiet. Mindful of sheet and stripmakers' hopes for an improvement in demand by the middle of this month from automobile builders with new models, scrap merchants have been looking for some tangible indication of improvement. Shipments of all grades continue restricted, and quotations show no change.

St. Louis—A period of almost complete inertia has developed in iron and steel scrap. New purchasing is at a minimum, and a number of important industries have temporarily suspended deliveries or are taking only a car or two daily. In the absence of large sales to test prices, quotations throughout the list remain unchanged.

Birmingham, Ala.—Even with slight activity in heavy melting steel, little is being carried on yards of consumers. Prices are unchanged and business is light.

Toronto, Ont.—Little business was reported by iron and steel scrap dealers for the week. Demand for heavy melting steel and turnings is light and only small tonnages of steel scrap are moving between dealers and consumers. There is some interest in machinery cast, but this is the only bright spot. Stove plate and malleable scrap are moving slowly and other iron grades are dull. Dealers are still out of the market and have made no revision in prices.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Cleveland Employment Up

Employment in 100 representative Cleveland factories increased 1.3 per cent in August, compared with July, according to the chamber of commerce of that city. This was the first gain in six months. Eleven of 60 companies which reported on future employment prospects anticipate substantial rises in September, nine expect nominal decreases and 40 expect to operate through the month at the August level. The average hiring rate in August was 43 cents an hour. In July it was 43.8 cents.

A patent for an automatic lifting device to be used for greasing automobiles was granted Aug. 25 to William A. Box, president of the William A. Box Iron Works, Denver, three months after he died.

Coke

Furnace and Foundry Requirements Still Moderate—Demand for Domestic Fuel Picking Up

COKE PRICES, PAGE 88

Pittsburgh—Demand for beehive coke shows little change, despite the slight gain in requirements at some foundries and a moderate upturn in buying for domestic purposes. The furnace grade is moving slowly against contracts, with spot sales light and usually at $2.40. Foundry coke prices are unchanged at $3.25 to $4.50.

Boston—By-product foundry coke continues unchanged at $10.50 per net ton f.o.b. cars delivered to points within the $3.10 oven freight rate. The $9.75 price quoted last week as applying to foundry coke within the switching zone of Boston should have applied to crushed coke.

Current demand for foundry coke is light. Cooler weather has led to more purchases of domestic fuel.

New York—With foundry operations in this district averaging 25 per cent or less, demand for coke remains quiet. Beehive furnace coke is $2 to $2.25, Connellsville, Pa., and beehive foundry coke, $3 to $3.25, for the ordinary brands. The higher brands are unchanged at $4.50, Latrobe, Pa., equivalent to $4.70, Connellsville. By-product coke also is steady at $8.70 to $9.10, Newark, N. J.; 10.50, New England; and $8.75, Philadelphia.

Cincinnati—Specifications for by-product foundry coke so far this month show an improvement, in anticipation of an increased melt following Labor day.

Birmingham, Ala.—Fall and winter requirements have not yet been indicated in purchases in this district. Production has been further curtailed. Consumption in this territory is down to lowest point in several years.

St. Louis—Indications point to a moderate revival in interest in metallurgical coke, shipping directions for September thus far being the best since last spring. A number of foundries plan to resume on part time during the next two weeks.

Pacific Coast

Dull Conditions Rule in Entire Coast District—Public Works Give Most Activity—Fewer New Projects Come Out — Prices Lack Test and Are Weak—Some Products Exceed 1930

San Francisco—*(By Air Mail)*—Little of importance transpired in the Pacific Coast markets for iron and steel products during the past week and the outlook is not especially encouraging. Building operations remain at low ebb and few projects of importance have developed. New inquiries were confined to projects involving unimportant tonnages.

Bars, Plates and Shapes

Reinforced concrete bar awards this week totaled 436 tons and brought the aggregate for the year to 49,122 tons, compared with 42,302 tons for the corresponding period in 1930. Most sales were in lots of less than 100 tons. Only two new inquiries of size came up for figures during the week.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

These called for 200 tons for an apartment in Los Angeles and 185 tons for the city of Los Angeles in connection with work on the Los Angeles river. No change in out-of-stock quotations on reinforcing bars is noted, 2.60c, base, on carload lots, prevailing in the San Francisco district and 2.50c, base, being firm in the Los Angeles section. Merchant bar steel is not in heavy demand and prices are weak at 2.05c, c.i.f.

The Steel Tank & Pipe Co. secured the only important award of the week. This called for 400 tons of 36 to 75-inch welded steel pipe for the Hetch Hetchy project, San Francisco. Awards so far this year total 112,632 tons, compared with 33,999 tons for the same period a year ago. Lincoln, Nebr., is in the market for 12,000 tons for a 36-inch welded, lock-bar or reinforced concrete and steel pipe line. Bids will be opened Sept. 22. No change in quotations has occurred lately and 1.85c to 1.95c, c.i.f., is general.

Awards of structural steel were the largest in over a month and aggregated 3293 tons. This brought the total for the year to 75,652 tons as compared with 80,718 tons for the corresponding period in 1930. The Consolidated Steel Corp. booked 175 tons for a plant for the Stauffer Chemical Co., Los Angeles. Pending business now exceeds 115,000 tons. Plain shapes range between 2.05c to 2.15c, c.i.f.

Other Finished Material

Awards of pipe were confined to lots of less than 100 tons and no important inquiries developed. Bids were opened on 4855 tons of 8 and 12-inch Class 150 pipe for Los Angeles. Bids are to be called for shortly on 319 tons of 6-inch Class 150 pipe for Mill Valley, Calif. Awards to date total 48,818 tons, compared with 56,850 tons for the same period last year. Standard steel pipe continues to move in small lots only. No pipe line inquiries of size are up for figures.

Demand for sheets has shown little improvement during the past three weeks. Consumers are buying only for immediate requirements and in many cases are drawing upon stocks in distributors' warehouses. Quotations on No. 24 gage galvanized sheets appear firm at 3.38c, c.i.f. No. 24 gage hot-rolled annealed sheets and No. 10 gage blue annealed sheets are quoted at 2.88c and 2.33c, c.i.f., respectively.

Seattle Inquiry Slow

Seattle—No improvement is apparent in the iron and steel markets of the Pacific Northwest. Inquiry is lacking, volume far below normal and prices unsatisfactory. Current activity is nearly all in public works. Unemployment is increasing. Boeing Airplane Co., Seattle, has an award from the war department to furnish 71 planes and 92 engines to cost $2,571,757.

Bars, Plates and Shapes

Mill prices are not firm although they have not been under pressure, inquiry being insufficient to give a real test. Plates are quoted nominally at 1.90c to 2.00c, shapes and merchant bars 2.05c. Reinforcing prices have held their own despite lack of business and continue at 2.30c for large tonnages and for smaller lots 2.45c and 2.50c.

The largest reinforcing contract awarded this week went to the Seattle plant of Pacific Coast Steel Corp., 300 tons for floors in the Federal building, Seattle, through Murch Bros., general contractors. Several small tonnages are pending, including 35 tons for a police station at Wenatchee, Wash., 80 tons for a bridge at Peshastin, Wash, and 40 tons for two highway jobs, bids opened this week.

Contract to furnish 200 tons of sheet steel piling for the substructure of the Northern Pacific Duwamish river bridge, Seattle, was awarded the Pacific Coast Steel Corp., Seattle, by General Construction Co., Seattle, general contractors. Plate business pending approximates 1200 tons, including a water pipe job at Wenatchee and the government Cle Elum dam project. Pittsburgh-Des Moines Steel Co. has furnished 65 tons of plates and shapes for a water tank for the new Seattle Ford plant.

Only unimportant tonnages for shapes are pending and no awards over 100 tons were reported this week. Bids have been opened for a machine shop at McNeill Island prison, 86 tons. Stewart Iron Works, Cincinnati, has the contract to furnish jail equipment for Wenatchee, Wash., tonnage unstated. Puget Sound navy yard will open bids Sept. 10 for 12,000 pounds black bar steel and 500 pounds copper nickel alloy.

Finished Materials

The wholesale jobbing trade is spotty and slow. Sales were heavier in August than in July but prices are so unstable that profits are lacking. Business is practically all out of stock as mill buying is low. Prices are drifting aimlessly and have no firm basis. Purchases are in small tonnages. While no item is particularly active, sheets are in comparatively fair demand.

Pipe Movement Is Dull

No awards were made this week but some business is pending. Seattle is taking bids for an improvement project involving 350 tons of 8 to 16-inch cast iron pipe while bids for 564 tons are in and pending at Helena, Mont. Rensselaer Valve Co. has taken contracts for equipment at Yakima, Wash., and Pendleton, Oreg., while miscellaneous items for the Yakima job will also be furnished by Olympic Foundry Co. and Atlas Foundry & Machine Co., Seattle.

Old Materials

Market demand for scrap is limited, $7.50 being the top price per gross ton now being paid. Dealers are not interested as stocks are large and not moving. Pacific Coast Steel Corp. has closed its two open-hearth furnaces for September, but is still running the mill, having a fair supply of ingots on hand.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	23	5
¼	62	50½	¾	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13	+48
¼	60	49½	½	23	7
1—1¼	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$33.00 to 35.00
Four-inch, Birmingham	37.00 to 39.00
Four-inch, Chicago	43.00 to 46.00
Six to 24-inch, Chicago	40.00 to 43.00
Six-inch and over, N. Y.	28.50 to 30.50
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Frans.	2.40c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*† (e)	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	4.00c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

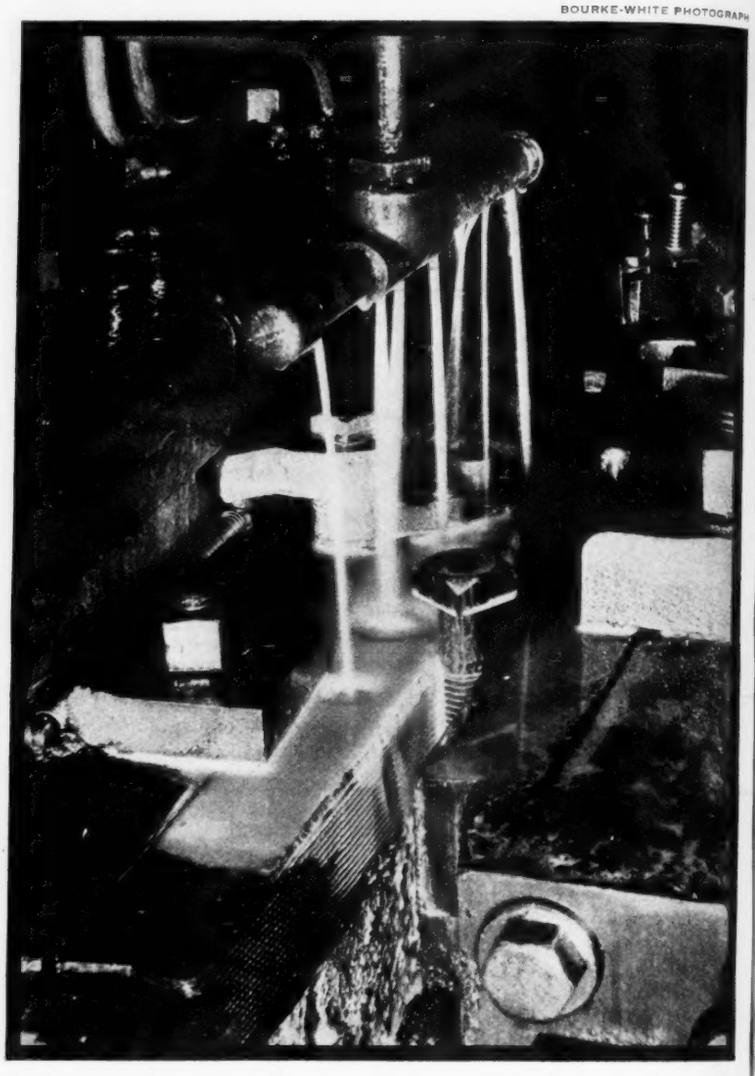
COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

DO YOU MACHINE PARTS THAT COULD BE MADE CHEAPER BY UPSETTING?

BOURKE-WHITE PHOTOGRAPH



Here's how one manufacturer cut costs through the R B & W bolt-making processes, which can produce many metal parts economically

He makes an important accessory used by the aviation industry. It is the highest quality product of its kind, selling for 18 times as much as similar competitive products, the price differential being reasonable because of the increased hours of service obtained.

Quality of materials in this man's product is paramount to cost.

But we found a way to save him considerable money on one part of his product. When we discovered him he was machining this part from a round bar. The finished part had the general contour of a bolt.

The R B & W Engineering Service developed the fact that we could make this part by the upsetting process in our bolt headers at a fraction of his cost to machine from the bar.

Do you use metal parts in large quantities that have the general outline of a bolt, and which you now mill from the bar? Send us specimens, and let us investigate whether we can help you do a constructive job of cost cutting through the upsetting, or heading, principle by which we make bolts.

Much of our machinery is of our own exclusive design, and is adaptable to many operating short cuts by comparison with machining methods.

R B & W EMPIRE BOLTS & NUTS

RUSSELL, BURDSALL & WARD BOLT & NUT CO.

ROCK FALLS, ILL. PORT CHESTER, N. Y. CORAOPOLIS, PA.

Sales Offices at Philadelphia, Detroit, Chicago, San Francisco, Los Angeles, Seattle, Portland, Ore.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 7.75c, Conn., for copper

Sheets	
Yellow brass (high)	15.37½
Copper, hot rolled	17.62½
Lead, full sheets (cut ½c more)	8.25
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	20.25
Seamless copper	20.12½
Rods	
Yellow brass (high, full turnings)	13.62½
Naval brass	14.75
Anodes	
Copper, untrimmed	15.12½
Wire	
Yellow brass (high)	15.87½

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.75 to 5.00
Chicago	4.25 to 4.75
Cleveland	4.50 to 5.00
St. Louis	4.00
Heavy Yellow Brass	
New York	3.00 to 3.25
Heavy Copper and Wire	
New York	5.50 to 5.75
Boston	5.00 to 5.25
Chicago	4.50 to 5.00
Cleveland	4.50 to 5.00
St. Louis	4.25 to 4.50
Composition Brass Borings	
New York	4.25 to 4.50
Yellow Brass Tubing	
Cleveland	3.00 to 3.25
Light Copper	
New York	4.50 to 4.75
Chicago	4.25 to 4.75
Cleveland	4.00 to 4.50
St. Louis	4.00
Light Brass	
Boston	2.00 to 2.25
Chicago	2.25 to 2.75
Cleveland	2.00 to 2.25
St. Louis	2.25
Zinc	
New York	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.50
Aluminum	
Clippings, soft, Cleveland	13.00 to 13.50
Clippings, hard, Cleveland	8.50 to 9.00
Borings, Cleveland	3.50 to 4.50
Mixed cast, Cleveland	4.00 to 5.00
Mixed cast, Boston	3.75 to 4.00
Mixed cast, St. Louis	4.00

Secondary Metals

Remelt alumnium No. 12	9.00 to 10.50
Brass ingots, 85-5-5-5	7.62½

Metals

Steadiness Features Quotations With Exception of Tin—Copper Demand Continues to Lag

New York—End of summer finds nonferrous metal prices substantially higher than at the beginning of the season with one notable exception, copper. The other metals have accomplished much more in adjusting production to consumption.

In the past week lead and zinc continued remarkably steady in the face of quietness. This was true also of copper but the latter is at its lowest price in history whereas the other metals held most of their recent substantial recoveries. Tin declined about 1 per cent but remains above its June low.

Copper—Domestic business was extremely light in the past week, while export business was moderate at times and very light on other days. For a while it looked as if very little, if any, metal was to be had at 7.50c but more metal has been available at this price in the past few days than desired. However, some custom smelters and nearly all other producers ask higher prices. Custom smelters have been able to maintain stability at this price for about a month because of the lack of competition by other sellers. Products continue on the basis of 7.75 cent copper.

Zinc—Despite dullness the market has held nominally at 3.80c, East St. Louis. in the absence of a test, however, it is difficult to tell what would develop if attractive inquiries appeared. Tri-State concentrate stocks increased 1979 tons in the week ended Aug. 29 to 81,988 tons, the largest total in a number of years. Prime western ore holds at $23.

Tin—After climbing above 27.00c, statistics for August were not as strong as had been expected, and the price reacted, reaching 26.00c on Friday. The start of the decline, together with disappointments on the monthly figures, encouraged realizing sales, which in turn caused further decline. Depressed stock markets here and in Berlin added to weakness. World visible supply, including Straits carryover, was 56,741 tons on Aug. 31, a decrease of 1314 tons.

Lead—For about two weeks this market was moderately active, giving a much better account of itself than any other metal. Buying was mostly for early September delivery. In the past few days the market has been quiet.

Aluminum—New business continues dull but prices are steady.

Benzol and Xylol Scarce; Prices Are Stronger

New York—Price increases in benzol and xylol are imminent. Formal announcement by leading producers and distributors is expected next week. It is likely benzol will be advanced 2c, and xylol 1c, although this schedule is not yet operative. Continued curtailed production has greatly reduced supplies. Buying has been fairly steady and several distributors are behind in shipments. Sales of phenol and napthalene are routine at unchanged prices. Sulphate of ammonia is slow, with prices weak.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.18
90 per cent benzol	0.18
Toluol	0.27
Solvent naphtha	0.24
Commercial xylol	0.24
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.30

Emery and grindstone exports in the first half of 1931 totaled 158,060 pounds.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
September 2	7.50	7.87½	7.25	26.70	27.05	4.40	4.22½	3.80	22.90	6.60	35.00
September 3	7.50	7.87½	7.25	26.55	26.95	4.40	4.22½	3.80	22.90	6.60	35.00
September 4	7.50	7.87½	7.25	26.05	26.40	4.40	4.22½	3.80	22.90	6.60	35.00
September 5—Holiday											
September 7—Holiday											
September 8	7.50	7.87½	7.25	25.75	26.12½	4.40	4.22½	3.80	22.90	6.60	35.00

Europe

British Economy Plans May Affect Markets—German Operations Further Curtailed

London—(*By Radio*)—Business in the British steel and iron markets is uncertain, pending further disclosures respecting the government's economy plans. A reduction in public expenditures may further restrict demand. Fresh orders have been placed recently to replenish stocks, including 5000 tons of castings, but they are inadequate for producers' purposes. Continental offers still are low, but the market is stagnant. The advance in tin is worrying tin plate manufacturers. Galvanized sheet prices are sagging. Japan is buying some sheets at Middlesbrough.

STEEL's correspondent at Berlin reports production and exports further curtailed. Scandinavia now is the best market for German products. Poland has obtained a large order for tubes. Belgian steel and iron companies are maintaining operations by accepting low-price orders. Market conditions in France are reported to be deteriorating.

German Steel Industry Faces Drastic Reductions

Berlin—A meeting of various domestic steel associations at Dusseldorf raises the question of a general reduction of domestic steel prices. This action, if it materializes, is to be regarded as a preventive measure against the intention of the government to cheapen German costs of production. Producers claim that a further reduction of prices could not be borne, and that such an action could be taken only in connection with a corresponding reduction of wages.

Since June, 1930, domestic steel prices have been reduced 8 to 9½ per cent, whereas the domestic prices for most other commodities have been cut at a heavier rate. The domestic basis price for merchant bars, now totaling 128 marks per metric ton, is about 32 marks above the price of 96 marks which foreign merchant bars would cost in Germany after adding the duty of 25 marks and 6 marks for freight to the £3 6s ($16.06) now quoted f.o.b. Antwerp.

On the average, works are now operating at about 45 per cent of normal capacity, and it is expected that more producers will have to follow the example of Krupp's in laying idle a number of large mills. Discussions are taking place among leading steelmasters with a view to coming to an arrangement to alternate total closing of the large combines, during which period the new orders would have to be transferred from the idle combine to those remaining in operation.

In this connection it should be mentioned, however, that for about four months an agreement has been in existence between the Good Hope Mining Co. and the Hosch-Koln-Neuessen combine, according to which these concerns' orders for rails and structural shapes are interchanged in order to rationalize production. The Russian orders will have been executed early in September, and by then the necessity for renewed dismissals of workers will again be considered. Stocks already are fairly high, especially those of semifinished products and pig iron, so that the possibility of adding to them is not substantial.

Domestic Situation Unchanged

The situation on the domestic market has not changed. Consumers and merchants are still more reluctant with regard to the pending decision on prices. The Mannesmann pipe works is to dismiss 300 workers in the steel mills, and about 1000 miners. Krupp's is closing the Friedrich-Alfred works entirely for 10 to 15 days and dismissing about 500 workers in the foundries. The Good Hope Mining Co. is expected to cut its dividend for the year ended June 30, 1931, which dividend previously had been raised from 7 to 10 per cent. Schweitzer & Oppler, Berlin, the leading scrap dealers in Germany, with an annual turnover of about 400,000 tons of scrap, and in which the Mitteldeutsche Stahlwerke and the Kattowitz Mining Co. are interested, have suffered a loss of 12,000,000 marks owing to bad management, while the capital stock totaled only 2,000,000 marks; the loss will be met by the interested combines and banks. The iron merchant Gebrueder Pierburg, Berlin, has discontinued payments, the liabilities amounting to 5,000,000 marks.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Sept. 5	British gross tons U. K. ports		Continental metric tons Channel or North Sea ports	
Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)				
PIG IRON				
Foundry, 2.50-3.00 Silicon	$14.22	2 18 6	$14.42 to $11.66	2 7 0 to 2 8 0
Basic bessemer	14.58	3 0 0*	10.94 to 11.18	2 5 0 to 2 6 0
Hematite, Phos. .03-.05	14.82	3 1 0	.....	.....
SEMIFINISHED STEEL				
Billets	24.30	5 0 0	$14.09 to $14.34	2 18 0 to 2 19 0
Wire rods, No. 5 gage	41.31	8 10 0	24.30	5 0 0
FINISHED STEEL				
Standard rails	40.10	8 5 0	$31.59	6 10 0
Merchant bars	1.52c	7 0 0	.70c to .72c	3 4 0 to 3 5 0
Structural shapes	1.68c	7 15 0	.68c to .69c	3 2 0 to 3 3 0
Plates, †¼-in. or 5mm.	1.79c	8 5 0	.83c to .84c	3 15 0 to 3 16 0
Sheets, black, 24 gage or 0.5mm.	1.90c	8 15 0	1.68c to 1.71c	7 12 6 to 7 15 0
Sheets, gal., 24 gage, corr.	1.95c	9 0 0	1.94c to 1.98c	8 17 6 to 9 0 0
Bands and strips	2.06c	9 10 0	.88c to .91c	4 0 0 to 4 2 6
Plain wire, base	1.84c	8 10 0	1.11c	5 1 3
Galvanized wire, base	2.39c	11 0 0	1.36c	6 3 9
Wire nails, base	2.39c	11 0 0	1.13c	5 2 6
Tin plate, box 108 lbs.	$ 3.28	0 13 6	$3.20	0 13 2‡

British ferromanganese £17 9s 6d ($85.00) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.80) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Renten Marks
Fdy. pig iron, Si. 2.5	$14.22	2 18 6	$11.76	309(2)	$12.83	460	$18.53	78
Basic bessemer pig iron	14.58	3 0 0*	12.74	325(1)	11.58	415	8.43	35.50
Furnace coke	2.67	0 11 0	5.68	145	5.16	185	5.08	21.40
Billets	25.52	5 5 0	16.46	420	17.44	625	26.24	110.50
Standard rails	1.79c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.63c	7 10 0	.90c	500	.79c	605	1.36c	126
Structural shapes	1.90c	8 15 0	.99c	550	.78c	600	1.35c	125
Plates, †¼-in. or 5mm.	1.95c	9 0 0	1.26c	700	.94c	720	1.59c	147
Sheets, black, 24 ga. or 0.5mm.	1.90c	8 15 0	2.19c	1,215	1.82c	1,400	1.26c	117
Sheets, galv., corr., 24 ga. or 0.5mm	2.03c	9 7 6	2.39c	1,325	2.47c	1,900	3.56c	330
Plain wire	1.84c	8 10 0	1.80c	1,000	2.08c	1,600	2.24c	207
Bands and strips	2.06c	9 10 0	1.01c	590	.78c	600	1.60c	148

*Basic. †British ship-plates, Continental bridge plates. ‡German.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

JUST *Right*

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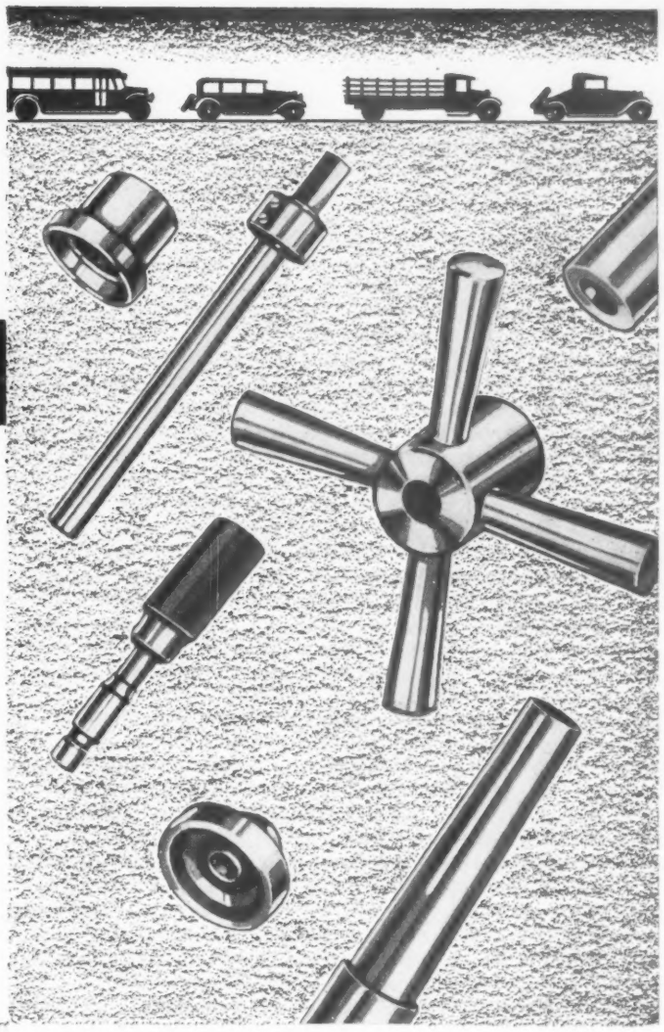
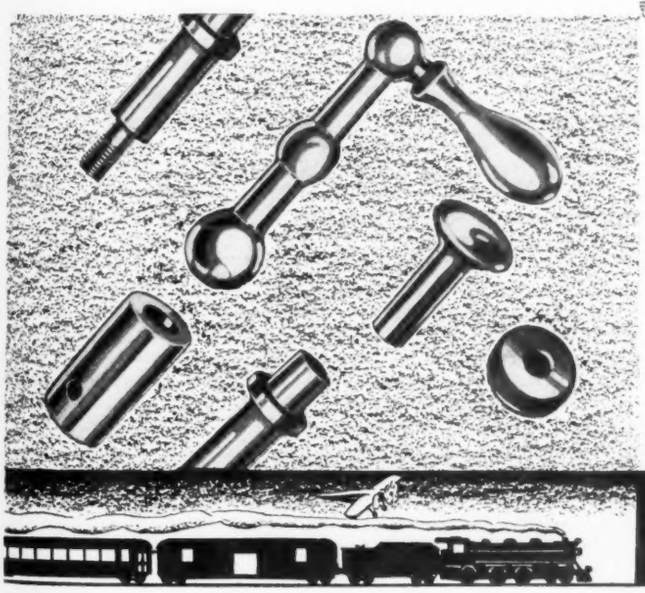


Far-sighted manufacturers are taking advantage of the present lull in business activity to devote attention to improvement of their product and greater economy in its production. Many have found Carnegie Carbon Manganese Steels fit in admirably with this program. These steels are furnished, hot rolled, in a number of grades suitable for various purposes. The forging grade responds to heat treatment in a manner similar to low nickel chromium steel. Other grades for threading and machining are particularly satisfactory. Faster and smoother production and lower tool costs have been the common experience of users. Suitable heat treating and case hardening develop a fine grained, uniformly hard case and tough, ductile core. The high quality of Carnegie Carbon Manganese Steels is paramount throughout the entire process of manufacture.



Make a comparative test with the steel you are now using. Carnegie Carbon Manganese Steels are supplied by a number of prominent manufacturers of cold finished steels. Carnegie metallurgical engineers will welcome an opportunity to cooperate with you.

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Machinery

RUMORS of potential activity in the automobile industry, strengthened by cases of actual production gains therein, continue to bolster up hopes for general recovery in machine tool business later in September or during October. While Cleveland builders report slight gains in this direction, gains in the Worcester district have not been held. Hesitation is manifest by all users in the closing of equipment orders, including government lists. Nevertheless, government business continues to be a factor of considerable importance, as indicated by the substantial award made recently to a Cleveland company, this covering automatic chucking machines.

New York—Machine tool buying continues spotty, sales being largely confined to individual units well spread over many industries. Automobile producers have been fairly active on equipment required on account of model changes. Rumors persist that Ford Motor Co. is likely to enter the market soon for equipment. In general, however, buying and inquiry are unchanged, equipment for public and government work being the exception. Action is expected this week on 17 lathes for the Brooklyn navy yard, indications being that this business will be divided.

Equipment for the 207th street subway shops, to the extent of about 50 tools, still is pending. Board of transportation officials are undecided as to whether to place the contract for all this equipment through one bidder who is low on the entire installation, or to divide it between the several dealers and builders who are low on various units. Close to $250,000 is involved in this business, low bid on the entire lot standing about $10,000 below the sum total of the low bids made by several shops on units.

Ball bearing shops in most instances are resuming operations following recent shutdowns. Just now Russia is taking fewer tools, but a large volume is pending, on which action is expected before the end of the year. A Schenectady plant building refrigerators has boosted its production considerably.

Worcester, Mass.—Demand just now is undergoing a rather sharp decline. This follows a period during which orders for grinders originating from free-wheeling and transmission developments, principally in the cases of Chevrolet and Buick, had given rise to hopes that the upswing was under way with motors in the lead.

Foreign demand likewise has slumped. Russia, the principal customer this year abroad, has not recently placed any new orders and most of its machines on older orders by now have been shipped. Consequently, the new purchasing commission, which is expected to visit plants in this country within the near future, will find most manufacturers ready and eager for further business.

Cleveland—While operations in the machine tool industry still remain at an extraordinarily low level, hopes for some degree of recovery later in September or during October generally are entertained. These hopes to some extent are justified by continued orders from the Detroit district for machines, tools and parts, as well as by persistent rumors of potential activity in automotive circles.

Government orders also are helping to relieve the situation, National Acme Co. recently having been the successful bidder on two multiple spindle automatic chucking machines for Frankford arsenal. This order is reported to total close to $27,000.

General employment conditions have improved slightly, the index covering 100 representative industrial concerns having risen for the first time in six months, according to the chamber of commerce.

Pittsburgh—Machine tool sales remain at a low ebb. August business continued at the poor rate of July and for most sellers the month's business was lighter than during the preceding 30 days.

Inquiry is quiet and no general lists are being issued. What inquiry is coming out usually results from activities of salesmen. Orders rarely call for more than single tools.

Chicago—While machine tool dealers have little upon which to work, some favorable factors are noted. Prospective buyers occasionally ask for estimates on equipment programs which they are laying out for the future. Many of the tool and die shops and light manufacturing plants closed down prior to Labor Day, but most of these now have resumed operations. This widespread closing and reduced operations have tended to interrupt such plans as were in the making.

Possibilities are seen that International Harvester Co. will be in the market for some standard tools to supplement the large order of special equipment purchased last spring. Great Northern railroad has closed on a 36-inch shaper and 30-inch lathe, for St. Paul, Minn., delivery. Collections are fair. Few dealers were able to carry over any business from August.

Will Develop Skilled Men For Machinery Industry

American Machinery & Tools institute, 40 North Wells street, Chicago, announces that Lewis institute, Chicago, has been selected as the institution in which will be carried out a plan for the development of skilled workers for the machinery and tools industries.

This plan involves an intensive two-year course, open primarily to likely candidates who have completed four years in high school, but with exceptions made in cases of well qualified men whose high school work has been interrupted unavoidably. These exceptions apply particularly to those with proven mechanical aptitude and practical experience.

Eight hours a day through 46 weeks of each of the two years ordinarily will be required for completion of this course. Of this time approximately one half will be devoted to practical machine and forge shop work, one quarter to drafting and design, and one quarter to English composition, mathematics, economics and industrial management, and various electives.

The fundamental purpose of this intensive training is to fit men ultimately to fill positions as general mechanics, tool and die makers, draftsmen, machine detail designers and tool designers, wherein a high degree of skill and judgment are required.

Government Lists Include Plant Equipment Items

New York—Among the important government bids opened recently, a number of plant equipment items, including machine tools, appear.

Navy bureau items include: Five electric hoists for Hampton Roads; one motor-driven milling machine for Portsmouth; and one precision tool room lathe for Mare Island. Army air corps has opened on two bench lathes for shops at Wright field.

Commonwealth Pier, Boston, where 1931 National Metal exposition will be held Sept. 21-25

National Metal Congress and Show Return to Boston

EYES of the metal world are turning toward Boston as final preparations are being made for the Thirteenth National Metal congress and exposition to be held in that city, Sept. 21-25. Not since 1924 has Boston or New England been host to the thousands of metallurgists, chemists, engineers and manufacturers interested in the development, production, processing and fabrication of metals.

Boston, "the cradle of American liberty," with a population of 2,000,000, has over 5200 manufacturing plants in its metropolitan area. And New England is one of the oldest and richest of the country's industrial and metalworking sections, thus it is appropriate that the 1931 congress and show should be held here.

Chief sponsor of the meeting and exhibition is the American Society for Steel Treating, whose annual conventions have expanded year by year into the National Metal Week idea. Cooperating in the 1931 program, as they have for the past several years, are the American Welding society, the American Institute of Mining and Metallurgical Engineers through its Iron and Steel and Institute of Metals divisions, and the American Society of Mechanical Engineers through its Iron and Steel and Machine Shop Practice divisions.

Old North church from belfry of which Paul Revere received signal to start his famous ride

An added group for the coming congress is the Society of Automotive Engineers through the Iron and Steel division of its standards committee.

The American Society for Steel Treating will maintain its headquarters at Hotel Statler, where all sessions and social features are scheduled. Technical sessions will be held morning and afternoon each day from Monday to Friday, and at least two are joint meetings with other participating groups. All meetings, however, will be open to all Metal Week visitors.

Members of the society will assemble Wednesday morning for the annual business meeting at which time officers will present reports and the nominating committee will propose its selection for 1932 officers. At the conclusion of this meeting, members will reassemble for the annual Edward DeMille Campbell Memorial lecture. Dr. C. H. Herty Jr., supervising chemist, bureau of mines experiment station, Pittsburgh, has been named 1931 lecturer.

Papers announced for presentation at the various technical sessions, and listed on Page 124 of this issue of STEEL, total 56, a number which represents an increase of 44 per cent over last year's papers. The session on Tuesday morning will be de-

Program of Papers for Steel Treaters

Monday, Sept. 21

MORNING

9:30 a.m.—Technical session, Hotel Statler ballroom. Chairmen: W. E. Ruder, General Electric Co., Schenectady, N. Y., and Dr. Frances H. Clark, Western Union Telegraph Co., New York.

"Precious Metal Alloys," by R. C. Brumfield, Cooper Union, New York.

"Cemented Tantalum Carbide," by Floyd C. Kelley, General Electric Co., Schenectady, N. Y.

"Resistance to Wear of Carbon Steels," by S. J. Rosenberg, bureau of standards, Washington.

"Tool Steel from the Consumers' Standpoint," by H. G. Keshian, Chase Co.'s Inc., Waterbury, Conn.

"Division of the Iron-Vanadium-Oxygen System Into Some of Its Constituent Binary and Ternary Systems," by C. H. Mathewson, E. Spire and C. H. Samans, Yale university, New Haven, Conn.

AFTERNOON

2:00 p.m.—Technical session, Hotel Statler ballroom. Chairmen: H. J. French, International Nickel Co., Bayonne, N. J., and R. S. Archer, A. O. Smith Corp., Milwaukee.

"Endurance Properties of Some Well-Known Steels in Steam," by T. S. Fuller, General Electric Co., Schenectady, N. Y.

"Characteristics of Deformation of Steel Under Constant Load at Elevated Temperatures," by G. R. Brophy, General Electric Co., Schenectady, N. Y.

"Behavior of Some Irons and Steels Under Impact at Low Temperatures," by Robert Sergeson, Republic Steel Corp., Massillon, O.

"Impact Characteristics of Steel Rails at Low Temperatures," by J. F. Cunningham and James Gilchrist, University of Manitoba, Winnipeg, Canada.

"Thermomagnetic Phenomena in Steel," by R. L. Sanford, bureau of standards, Washington.

"Thermomagnetic Investigations of Tempering of Quenched 0.75 Per Cent Carbon Steel," by C. A. Ellinger, bureau of standards, Washington.

Tuesday, Sept. 22

MORNING

8:15 a.m.—Plant visitation.

9:30 a.m.—Joint technical session with American Society of Mechanical Engineers on Sheet Steel, Hotel Statler ballroom. Chairmen: J. H. Nead, Inland Steel Co., East Chicago, Ind., and H. J. Stagg, Halcomb Steel Co., Syracuse, N. Y.

"Evaluation of the 'Drawing' Quality of Extra Deep Drawing Sheets," by Thomas Dockray, Eastern Rolling Mill Co., Baltimore.

"Thin Strip Steel for Deep Drawing," by H. T. Morton and I. A. Rummler, Hoover Steel Ball Co., Ann Arbor, Mich.

"Some Effects of the Amount and Rate of Deformation on a Low-Carbon Strip Steel," by Joseph Winlock and A. E. Lavergne, Edward G. Budd Mfg. Co., Philadelphia.

"Comparison of Sheet and Strip Steels for Difficult Stampings," by E. S. Lawrence, Duralloy Co., Pittsburgh.

"Effect of Normalizing Upon the Grain Structure and Physical Properties of Automobile Sheet Steel," by W. F. McGarrity, Youngstown Sheet & Tube Co., Youngstown, O., and H. V. Anderson, Lehigh university, Bethlehem, Pa.

"Plastic Drawing of Sheet Steel Into Shapes," by E. V. Crane, E. W. Bliss Co., Brooklyn, N. Y.

"Lubricants Used in Deep Drawing of Sheet Steel," by Maurice Reswick, Pennsylvania Lubricating Co., Pittsburgh.

AFTERNOON

2:00 p.m.—Technical session, Hotel Statler ballroom. Chairmen: Dr. Albert Sauveur, Harvard university, Cambridge, Mass., and Prof. H. M. Boylston, Case School of Applied Science, Cleveland.

"Indentification of Inclusions," by Leland E. Grant, Chicago, Milwaukee, St. Paul & Pacific railroad, Milwaukee.

"Effect of Heat Treatment Upon Ferrite Banding of Steel," by W. E. Harvey and Bradley Stoughton, Lehigh university, Bethlehem, Pa.

"Ghost Lines in Forgings," by J. F. Harper and H. J. Stein, Allis-Chalmers Mfg. Co., Milwaukee.

"Solubility of Oxygen in Solid Iron," by N. A. Ziegler, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Scaling of Steel at Elevated Temperatures by Reaction with Gases and the Properties of the Resulting Oxides," by D. W. Murphy, W. P. Wood, University of Michigan, Ann Arbor, Mich., and W. E. Jominy, A. O. Smith Corp., Milwaukee.

"Aqueous Solutions of Ethylene Glycol, Glycerine and Sodium Silicate as Quenching Media," by T. E. Hamill, bureau of standards, Washington.

Wednesday, Sept. 23

MORNING

8:15 a.m.—Plant visitation.

9:30 a.m.—Annual meeting in Hotel Statler ballroom. Chairman: J. M. Watson, President.
Campbell Memorial Lecture, by Dr. C. H. Herty Jr., supervising chemist, bureau of mines experiment station, Pittsburgh. Chairman: Dr. Zay Jeffries, consulting metallurgist, Aluminum Co. of America, and General Electric Co.

AFTERNOON

2:00 p.m.—Technical session on steel melting. Chairmen: G. B. Waterhouse, Massachusetts Institute of Technology, Cambridge, Mass., and G. V. Luerssen, Carpenter Steel Co., Reading, Pa.

"Melting of Crucible Tool Steel," by Owen K. Parmiter, Firth-Sterling Steel Co.

"Open-Hearth Process," by Dr. C. H. Herty Jr., bureau of mines experiment station, Pittsburgh.

"Making of Acid Electric Steel for Castings," by George Batty, Steel Castings Development Bureau, Philadelphia. To be presented by Major R. A. Bull.

"Melting of Tool and Other High-Grade Steels in the Basic Electric Furnace," by J. P. Gill and R. E. Trembour, Vanadium Alloys Steel Co., Latrobe, Pa.

"Ingots, Ingot Molds and Castings," by G. A. Dornin, Baltimore.

"Development of Italian Industry Making Special Steels and Irons," by Dr. Frederico Giolitti, Torino, Italy.

Thursday, Sept. 24

MORNING

8:15 a.m.—Plant visitation.

9:30 a.m.—Technical session, Hotel Statler ballroom. Chairmen: J. P. Gill, Vanadium Alloys Steel Co., Latrobe, Pa., and Jerome Strauss, Vanadium Corp. of America, Bridgeville, Pa.

"Cold Treatment of Certain Alloy Steels," by G. V. Luersson and O. V. Greene, Carpenter Steel Co., Reading, Pa.

"Nature of Abnormal Grain Growth in High-Speed Steel," by G. R. Brophy and R. H. Harrington, General Electric Co., Schenectady, N. Y.

"Some Physical Properties of High-Speed Steel," by J. V. Emmons, Cleveland Twist Drill Co., Cleveland.

"Data on Steel Made Without Manganese," by Capt. S. B. Ritchie, Watertown Arsenal, Watertown, Mass.

"Alloys of Iron, Manganese and Carbon," by Dr. F. M. Walters, Carnegie Institute of Technology, Pittsburgh.

"Dendrites in Nickel Steel," by Albert Sauveur, Harvard university, Cambridge, Mass., and E. L. Reed, American Sheet & Tin Plate Co., Pittsburgh.

AFTERNOON

2:00 p.m.—Technical session, Hotel Statler ballroom. Chairmen: E. C. Bain, United States Steel Corp., Kearny, N. J., and Dr. Bradley Stoughton, Lehigh university, Bethlehem, Pa.

"Age Hardening Phenomena in Typical Fusion Weld Metal," by F. R. Hensel and E. J. Larsen, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Magnetic and Mechanical Hardness of Dispersion Hardened Iron Alloys," by K. S. Seljesater and B. A. Rogers, Western Electric Co., Chicago.

"Aging in Low-Carbon Steels," by A. Allan Bates, Case School of Applied Science, Cleveland.

"Some New Aspects of the Iron-Carbon Diagram," by H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland.

"Surface Energy of Iron Carbide," by Yap Chu-Phay, 27 Grove street, New York.

"Influence of Special Elements on the Carbon Content

(*Concluded on Page* 127)

Program of Papers for Steel Treaters

(*Concluded on Page* 124)

of the Iron-Carbon Euctoid," by E. L. Reed, American Sheet & Tin Plate Co., Pittsburgh.

"Motion Picture Showing the A_3 Transformation in Pure Iron," by Leland R. Van Wert, Harvard university, Cambridge, Mass.

Friday, Sept. 25

MORNING

8:15 a.m.—Plant visitation.

9:30 a.m.—Technical session on stainless alloys, Hotel Statler ballroom. Chairmen: T. H. Nelson, consulting metallurgist, Philadelphia, and M. A. Grossman, Republic Research Corp., Canton, O.

"Corrosion Resistant Steels," by R. L. Duff, Standard Oil Development Co., Elizabeth, N. J.

"Manufacture, Properties and Uses of 18-8 Chromium-Nickel Steel Wire," by W. H. Wills and J. K. Findley, Ludlum Steel Co., Dunkirk, N. Y.

"Further Studies on Chromium-Nickel-Iron and Related Alloys," by V. N. Krivobok, E. L. Beardman, H. J. Hand, T. O. A. Holm, A. Reggiori and H. S. Rose, Carnegie Institute of Technology, Pittsburgh.

"Influence of Grain Size on the Properties and Corrosion Resistance of the 18-8 Iron-Chromium-Nickel Alloy for Elevated Temperature Service," by H. D. Newell, Babcock & Wilcox Tube Co., Beaver Falls, Pa.

"Hardness of Chromium as Determined by the Vickers-Brinell, Bierbaum and Mohs Methods," by Richard Schneidewind, University of Michigan, Ann Arbor, Mich.

AFTERNOON

2:00 p.m.—Joint technical session with Iron and Steel division, American Institute of Mining and Metallurgical Engineers, Hotel Statler ballroom. Chairmen: V. O. Homerberg, Massachusetts Institute of Technology, Cambridge, Mass., and A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Short-Time Nitriding," by J. J. Egan, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Correlation of the Crystal Structures and Hardness of Nitrided Cases," by O. E. Harder and G. B. Todd, Battelle Memorial institute, Columbus, O.

"Nondeforming Alpha-Delta Carburizing Steel," by A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Role of Energizers in Carburizing Compounds," by George M. Enos, University of Cincinnati, Cincinnati.

"Inspection of Welds with Gamma Rays," by Gilbert E. Doan, Lehigh university, Bethlehem, Pa.

"Photomicrographs of Steels with 1 Per Cent Carbon Arranged in Graded Series for Use as Standard," by Haakon Styri and H. O. Walp, S. K. F. Research Laboratories, Philadelphia.

"Development of Continuous Gas Carburizing," by R. J. Cowan, Surface Combustion Corp., Toledo, O.

voted to sheet steel and will be attended by members of the Iron and Steel division of the A.S.M.E.

The session on Friday morning will be confined to the metallurgy, properties and applications of stainless alloys. At the concluding session on Friday afternoon, arranged in co-operation with the Iron and Steel division of the American Institute of Mining and Metallurgical Engineers, the subject will be hardening of steels, particularly by the nitriding process.

Many attending National Metal congresses take advantage of the opportunity to visit industrial plants in the vicinity of the convention city. On Tuesday morning a trip has been arranged to the Watertown arsenal. For Wednesday morning optional trips are scheduled to the Fore river plant of the Bethlehem Shipbuilding Corp., or the Boston Gear Works and Pneumatic Scale Co. The River works of the General Electric Co., Lynn, Mass., or Naumkeag Steam Cotton Co., Salem, Mass., are the options for Thursday. For Friday morning, trips to the United Shoe Machinery Co., Beverly, Mass., or Walworth Co. are offered.

The annual banquet, the principal social feature of the Steel Treaters, will be served in the Hotel Statler ballroom on Thursday evening. At this time, Robert G. Guthrie, president of the society in 1930, will be presented with the Past President's medal as a recognition of his services. Another feature will be the awarding of the Henry Marion Howe medal.

Show at Commonwealth Pier

Commonwealth Pier will house the National Metal exposition as it did in 1924. As compared with the somewhat restricted show of 1930 held in Hotel Stevens, Chicago, this year's exhibit space amounting to 60,000 square feet will show an increase of 50 per cent. Approximately 150 exhibitors will be represented.

Many of the exhibits will be in operation. In one section gas and electric furnaces will be running at temperatures up to 2550 degrees Fahr., and in another section will be demonstrated electric and gas welding and cutting apparatus.

Other important divisions of the show will include steels and steel products, nonferrous metals, heat treating materials, cleaning compounds, heat control apparatus, metallurgical and physical testing devices, cutting alloys, castings, refractories, abrasives, machine tools and an extensive line of welding accessories such as electrodes, wire, torches, electrode holders and torches.

A list of exhibitors and their booth numbers will be found on Page 139 of this issue of STEEL.

J. M. Watson

President, American Society for Steel Treating

A. H. d'Arcambal

Vice President, American Society for Steel Treating

Welding Society Schedules 17 Papers on Program

ACTIVITIES of the fall meeting of the American Welding society will commence Monday afternoon, Sept. 21, with a session devoted to structural steel welding. Six more technical sessions are scheduled throughout the week, one for Tuesday morning, sessions both morning and afternoon of Wednesday and Thursday and the concluding meeting on Friday morning.

Headquarters will be maintained at the Copley Plaza hotel and here will be held all sessions, a directors' meeting and most social events. Directors will convene at dinner on Monday evening. A brief business meeting will be conducted Tuesday morning.

On Tuesday afternoon, members of the society with their guests and friends will take an outing and boat trip to Pemberton, remaining there for dinner and a sports program and returning to Boston in the evening. The annual banquet, to be followed with dancing, will be served in the ballroom of the Copley Plaza on Thursday evening.

The Monday afternoon session session should be of particular interest for at this time the structural steel welding committee will present a review of its work. This group has been engaged in a research of far-reaching importance. Under its direction, 1395 welded specimens were made in 39 fabricating shops in widely separated parts of the country and these were tested in 24 laboratories. The committee will present results of the investigation.

E. A. Doyle

President, American Welding Society

The American Welding society is co-operating in the National Metal exposition with a section in which manufacturers will display welding and cutting equipment, accessories and products made by welding processes.

The program of technical sessions and papers is as follows:

Monday, Sept. 21

MORNING

9:45 a.m.—Registration, Copley Plaza hotel.

AFTERNOON

3:00 p.m.—Technical session, Copley Plaza hotel. Presiding officer: L. S. Moisseiff, chairman, structural steel welding committee.

A review of the work of the structural steel welding committee, investigations undertaken by it and the results of a series of 1395 specimens made up by 39 fabricating shops and tested in 24 laboratories will be presented by the executive committee.

EVENING

6:00 p.m.—Dinner meeting of board of directors, Copley Plaza hotel. Presiding officer: E. A. Doyle, president, American Welding society.

Tuesday, Sept. 22

MORNING

9:45 a.m.—Business meeting, Copley Plaza hotel. Presiding officer: E. A. Doyle, president.

10:15 a.m.—Technical session. Presiding officer: E. A. Doyle, president.

"The Yale University Group of Welded Buildings," by G. D. Fish, consulting engineer.

"Welding Solves Another Problem," by F. P. McKibben, consulting engineer.

"Automatic Gas Cutting," by R. F. Helmkamp, Air Reduction Sales Co.

3:00 p.m.—Boat trip to Pemberton.

Wednesday, Sept. 23

MORNING

9:45 a.m.—Technical session, Copley Plaza hotel. Presiding officer: H. P. Peabody, chairman, Boston section, American Welding society.

"The Future of Welded Ship Construction," by J. Kjekstad, United Dry Docks Inc.

"Resistance Welding of Metal Fabric," by W. T. Ober, Thomson Gibb Electric Welding Co.

"Four Problems Encountered in Flash Welding Mild Steel," by E. R. Torgler, S. R. Dresser Mfg. Co.

AFTERNOON

2:00 p.m.—Technical session, Copley Plaza hotel. Presiding officer: C. A. McCune, past president, American Welding society.

"The Engineer, the Welder and the Foundryman," by P. J. Horgan, Lynn Works, General Electric Co.

"Maximum Stress; Its Influence on Cost and Service Life of a Structure," by Everett Chapman, Lukenweld Inc.

"Welding of Galvanized Steel," by H. F. Reinhard, chief engineer, J. B. Colt Co.

"Fatigue Properties of Welds," by R. A. Weinman, General Electric Co.

Thursday, Sept. 24

MORNING

9:45 a.m.—Technical session, Copley Plaza hotel. Presiding officer: J. J. Crowe, member of executive committee of American Welding society.

"Relief of Welding Strains by Annealing," by C. H. Jennings, Westinghouse Electric & Mfg. Co.

"Welded Pipings and Fittings in Heating Installations," by F. J. Maeurer, Air Reduction Sales Co.

"Welding of Copper and Brass Piping," by H. V. Inskeep, Linde Air Products Co.

AFTERNOON

2:00 p.m.—Technical session, Copley Plaza hotel. Presiding officer: F. P. McKibben, senior vice president, American Welding society.

"Welding of Piping in New York Hospital—Cornell Medical Clinic," by representative of Admirall & Co.

F. P. McKibben

Senior Vice President, American Welding Society

"Factors Affecting the Weldability of Steel," by Wilmer E. Stine, Lincoln Electric Co.

Discussion of paper "Factors Affecting the Weldability of Steel," by F. T. Llewellyn, United States Steel Corp.

6:30 p.m.—Annual banquet and dance, Copley Plaza hotel ballroom.

Friday, Sept. 25

MORNING

9:45 a.m.—Technical session, Copley Plaza hotel. Presiding officer: P. P. Alexander, chairman, Boston section, Fundamental Research committee, American Bureau of Welding.

"Welding of Everdur Tanks," by Ira T. Hook, American Brass Co., and M. Powell, Whitlock Coil Pipe Co.

"Underwater Cutting," a lecture and motion picture by Charles Kandal, Craftsweld Equipment Corp.

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PUTTING your production on a basis of lower costs now will do more than improve your next month's profit and loss statement. It will help you reap a far greater harvest of profits as the business barometer rises.

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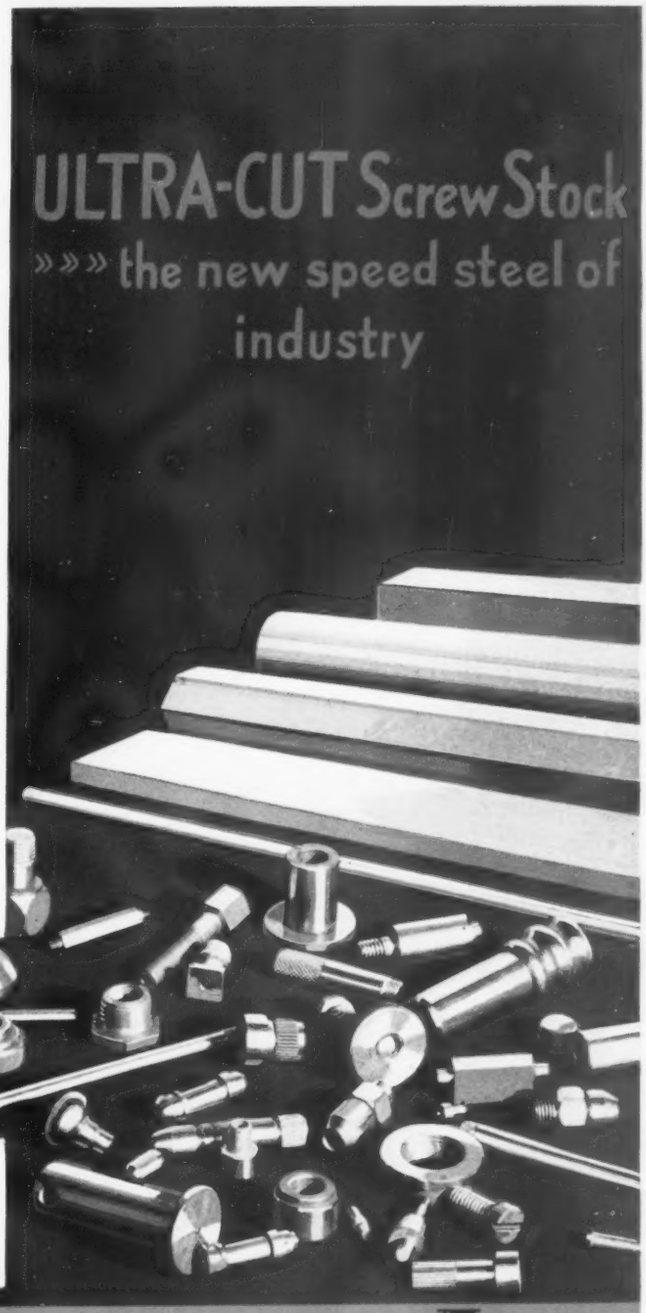

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Five Sessions Arranged by Iron and Steel Group

MANY members of the Iron and Steel Division of the American Institute of Mining and Metallurgical Engineers will participate in the National Metal congress, the officers of the group having arranged an interesting technical program. With the Institute of Metals, the Iron and Steel division will have headquarters at Hotel Statler.

Five technical sessions will be held during the week with the first on Wednesday afternoon, a joint session with the Institute of Metals. Age hardening will be the topic, with four papers bearing on that subject.

At the second session on Thursday morning, four papers are to be read, all relating to alloys of iron. Three more papers will be presented at a general session in the early afternoon. At 4 p.m., however, the Iron and Steel division and Institute of Metals will meet jointly to hear a science lecture by Dr. P. W. Bridgman, Hollis professor of mathematics and natural philosophy, Harvard university, Cambridge, Mass. Dr. Bridgman's subject will be "Recently Discovered Complexities in the Properties of Simple Substances."

Two Sessions Friday Afternoon

Two concurrent sessions are planned for Friday afternoon, one a joint meeting with the American Society for Steel Treating and the other a symposium on metallurgical education. At the joint meeting seven papers will be read dealing chiefly with the hardening of steels, particularly by the recently developed nitriding process.

The Iron and Steel and Institute of Metals divisions will join in a dinner in the Hotel Statler Georgian room on Wednesday evening.

The program of papers for the meeting is as follows:

Wednesday, Sept. 23

AFTERNOON

12:15 p.m.—Luncheon meeting, executive committee of iron and steel division, Parlor B, Hotel Statler.

2:00 p.m.—Joint meeting of iron and steel division and institute of metals on age hardening, Ballroom foyer, Hotel Statler. Chairman: N. P. Pilling, International Nickel Co., Bayonne, N. J.; vice chairman, W. E. Ruder, General Electric Co., Schenectady, N. Y.

"Preparation of a Uniform Abrasive for Metallographic Polishing," by J. L. Rodda, New Jersey Zinc Co., Palmerton, N. J.

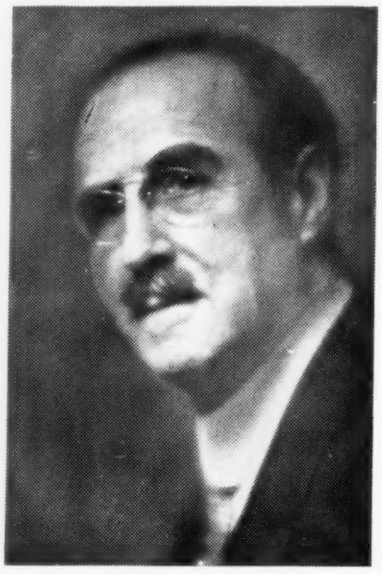
"Age Hardening of Austenite," by F. R. Hensel, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Some Developments in High Temperature Alloys in the Nickel-Cobalt-Iron System," by C. R. Austin, Pittsburgh, and G. P. Halliwell, Carnegie Institute of Technology, Pittsburgh.

"Age Hardening Copper-Titanium Alloys," by F. R. Hensel and E. I. Larsen, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

EVENING

6:30 p.m.—Joint dinner of iron and steel division and institute of metals, Georgian room, Hotel Statler. Speaker: Alan Kissock, Climax Molybdenum Co., in a nontechnical talk on "Molybdenum."



F. M. Becket

Chairman, Iron and Steel Division, American Institute of Mining and Metallurgical Engineers

Thursday, Sept. 24

MORNING

8:30 a.m.—Plant visitation.

9:30 a.m.—Technical session on alloys of iron, Georgian room, Hotel Statler. Chairman: Dr. Albert Sauveur, Harvard university, Cambridge, Mass.; vice chairman, E. C. Bain, United States Steel Corp., Kearny, N. J.

"Transformational Characteristics of Iron-Manganese Alloys," by Howard Scott, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Composition Limits of the Alpha-Gamma Loop in the Iron-Tungsten System," by W. P. Sykes, Cleveland Wire Works, General Electric Co., Cleveland.

"Iron Alloys-Magnetic Properties versus Allotropic Transformations—A Connecting Link?" by T. D. Yensen and N. A. Ziegler, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Low-Carbon Steels," by H. B. Pulsifer, Ferry Cap & Set Screw Co., Cleveland.

AFTERNOON

12:15 p.m.—Luncheon meeting of papers committee, Iron and Steel division, Parlor B, Hotel Statler.

2:00 p.m.—General technical session, Georgian room, Hotel Statler. Chairman: W. J. MacKenzie, Republic Steel Corp., South Chicago, Ill.; vice chairman, F. N. Speller, National Tube Co., Pittsburgh.

"Electrolytic Extraction of MnO, MnS, FeS and SiO_2 Inclusions from Plain Carbon Steels," by G. R. Fritter, bureau of mines, Pittsburgh.

"Inclusions and Their Effect on Impact Strength of Steel," by A. B. Kinzel and Walter Crafts, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Dilatometric Study of Chrome-Nickel-Iron Alloys," by V. N. Krivobok and Maxwell Gensamer, Carnegie Institute of Technology, Pittsburgh.

4:00 p.m.—Joint meeting of Iron and Steel division and Institute of Metals for science lecture, Georgian room, Hotel Statler, Chairman: F. M. Becket, Union Carbide Co., New York; vice chairman, Sam Tour, Lucius Pitkin Inc., New York.

"Recently Discovered Complexities in the Properties of Simple Substances," by Dr. P. W. Bridgman, Hollis professor of mathematics and natural philosophy, Harvard university, Cambridge, Mass.

Friday, Sept. 25

MORNING

8:30 a.m.—Plant visitation.

AFTERNOON

2:00 p.m.—Joint meeting of Iron and Steel division with American Society for Steel Treating on nitriding and carburizing, Hotel Statler ballroom. Chairmen: V. O. Homerberg, Massachusetts Institute of Technology, Cambridge, Mass., and A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Short-Time Nitriding," by J. J. Egan, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Correlation of the Crystal Structures and Hardness of Nitrided Cases," by O. E. Harder and G. B. Todd, Battelle Memorial institute, Columbus, O.

"Nondeforming Alpha-Delta Carburizing Steel," by A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Role of Energizers in Carburizing Compounds," by George M. Enos, University of Cincinnati, Cincinnati.

"Inspection of Welds with Gamma Rays," by Gilbert E. Doan, Lehigh university, Bethlehem, Pa.

"Photomicrographs of Steels with 1 Per Cent Carbon Arranged in Graded Series for Use as Standard," by Haakon Styri and H. O. Walp, SKF Research Laboratories, Philadelphia.

"Development of Continuous Gas Carburizing," by R. J. Cowan, Surface Combustion Corp., Toledo, O.

2:00 p.m.—Joint session of Iron and Steel division and Institute of Metals in symposium on metallurgical education, Hotel Statler. Chairman: G. B. Waterhouse, Massachusetts Institute of Technology, Cambridge, Mass.

"The World of Metallurgy," by J. A. Mathews, Crucible Steel Co. of America, New York.

"Metallurgical Fundamentals Present and Future," by Charles G. Maier, bureau of mines, Berkeley, Calif.

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When you specify steel poured in Gathmann Molds, you get that priceless ingredient—dependability.

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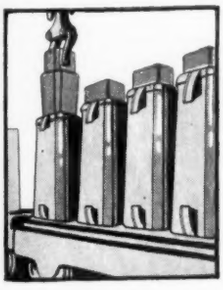

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Institute of Metals Lists Papers on Nonferrous

FOR several years the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers has been a most active participant in the National Metal congress. Judging by the program which has been arranged and the interest shown, this year's record will compare favorably with those of the past.

Headquarters will be established at Hotel Statler, as is the case with the Iron and Steel division of the Metallurgical Engineers.

Activities will begin on Monday morning with a technical session on the subject of copper and copper alloys. Five papers will be read and discussed. Following this meeting the executive committee of the institute will meet at luncheon.

At a second technical session in the afternoon, four papers will be presented, two discussing corrosion and two on the subject of crystal orientation of rolled nonferrous alloys. No session will be held on Tuesday to give members an opportunity to attend meetings of other participating groups.

Session on Age Hardening

Wednesday morning has been left open for plant visitations, but at noon the advisory committee, American Society for Testing Materials committee B-3 on corrosion of nonferrous alloys, will convene. In the afternoon, the Institute of Metals will meet jointly with the Iron and Steel division when four papers dealing with age hardening will be read.

The two divisions will attend a joint dinner in the evening at which Alan Kissock, Climax Molybdenum Co., will speak nontechnically on "Molybdenum."

Another joint session with the Iron and Steel division is scheduled for late Thursday afternoon, when a science lecture will be presented by Dr. P. W. Bridgman, Hollis professor of mathematics and natural philosophy, Harvard university, Cambridge, Mass. The subject of the lecture will be "Recently Discovered Complexities in the Properties of Simple Substances."

The concluding session is scheduled for Friday afternoon when a symposium will be held on metallurgical education.

Sam Tour is chairman of the Institute of Metals; J. R. Freeman Jr. and C. H. Mathewson are vice chairmen; and William M. Corse is secretary-treasurer. John L. Christie and E. M. Wise, chairman and vice chairman of the divisions papers and meetings committee have been active in organizing the technical program for the meeting.

The program has been announced by the committee as follows:

Monday, Sept. 21

Registration, Georgian Room, Hotel Statler.

Tuesday, Sept. 22

MORNING

9:30 a.m.—Technical session on copper and copper alloys, Georgian room, Hotel Statler. Chairman: J. L. Christie, Bridgeport Brass Co., Bridgeport, Conn.; vice chairman, W. A. Scheuch, Western Electric Co., Chicago.

"Equilibrium Diagram of the Copper-Rich Copper-Silver Alloys," by Cyril S. Smith and W. Earl Lindlief, American Brass Co., Waterbury, Conn.

"The Beta to Alpha Transformation in a Hot-Forged Brass Shape," by Robert S. Baker, American Brass Co., Waterbury, Conn.

"Copper Embrittlement," by L. L. Wyman, General Electric Co., Schenectady, N. Y.

"Some Important Factors Controlling the Crystal Macrostructure of Copper Wire Bars," by L. H. DeWald, Western Electric Co., Chicago.

"Effect of Secondary Copper on the Metal Market and Its Relation to Domestic Production and Consumption," by Percy E. Barbour, New York.

AFTERNOON

12:15 p.m.—Luncheon meeting of executive committee, Institute of Metals.

Sam Tour

Chairman, Institute of Metals Division, American Institute of Mining and Metallurgical Engineers

2:00 p.m.—General technical session, Georgian room, Hotel Statler. Chairman; E. M. Wise, International Nickel Co., Bayonne, N. J.; vice chairman; T. S. Fuller, General Electric Co., Schenectady, N. Y.

"Influence of Stress on Corrosion," by D. J. McAdam Jr., bureau of standards, Washington.

"Seasonal Variation in Rate of Impingement Corrosion," by Alan Morris, Bridgeport Brass Co., Bridgeport, Conn.

"Relation of Crystal Orientation To the Bending Qualities of a Rolled Zinc Alloy," by Gerald Edmunds and M. L. Fuller, New Jersey Zinc Co., Palmerton, N. J.

"Preferred Orientation Produced by Cold Rolling in Sheets of Aluminum, Nickel, Copper and Silver," by Cleveland B. Hollabaugh and Wheeler P. Davey, Pennsylvania State college, State College, Pa.

Wednesday, Sept. 23

MORNING

8:30 a.m.—Plant visitation.

AFTERNOON

12:15 p.m.—Luncheon meeting, advisory committee, American Society for Testing for Testing Materials committee B-3 on corrosion of nonferrous alloys. Chairman: T. S. Fuller.

2:00 p.m.—Joint meeting of institute of metals and iron and steel division on age hardening. Ballroom foyer, Hotel Statler. Chairman: N. B. Pilling, International Nickel Co., Bayonne, N. J.; vice chairman, W. E. Ruder, General Electric Co., Schenectady, N. Y.

"Preparation of a Uniform Abrasive for Metallographic Polishing," by J. L. Rodda, New Jersey Zinc Co., Palmerton, N. J.

"Age Hardening of Austenite," by F. R. Hensel, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Some Developments in High-Temperature Alloys in the Nickel-Cobalt-Iron System," by C. R. Austin, Pittsburgh, and G. P. Halliwell, Carnegie Institute of Technology, Pittsburgh.

"Age Hardening Copper-Titanium Alloys," by F. R. Hensel and E. I. Larsen, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

EVENING

6:30 p.m.—Joint dinner of institute of metals and iron and steel divisions, Georgian room, Hotel Statler. Speaker: Alan Kissock, Climax Molybdenum Co., in a nontechnical talk on "Molybdenum."

Thursday, Sept. 24

AFTERNOON

4:00 p.m.—Joint meeting of Institute of Metals and Iron and Steel division for science lecture, Georgian room, Hotel Statler. Chairman: F. M. Becket, Union Carbide Co., New York; vice chairman, Sam Tour, Lucius Pitkin Inc., New York.

"Recently Discovered Complexities in the Properties of Simple Substances," by Dr. P. W. Bridgman, Hollis professor of mathematics and natural philosophy, Harvard university, Cambridge, Mass.

Friday, Sept. 25

AFTERNOON

2:00 p.m.—Joint session of Institute of Metals and Iron and Steel division in symposium on metallurgical education, Hotel Statler. Chairman: G. B. Waterhouse, Massachusetts Institute of Technology, Cambridge, Mass.

"The World of Metallurgy," by J. A. Mathews, Crucible Steel Co. of America, New York.

"Metallurgical Fundamentals Present and Future," by Charles G. Maier, bureau of mines, Berkeley, Calif.

Mechanical Engineers Will Conduct Day's Program

FOLLOWING the custom of previous years, two divisions of the American Society of Mechanical Engineers will participate in the 1931 National Metal congress. These are the Iron and Steel division and the Machine Shop Practice division, both making their headquarters at Hotel Statler.

Scheduled activities of these groups will be confined to Tuesday, Sept. 22. In the morning, members and guests will have the option of attending the sheet steel session arranged jointly by the Iron and Steel division and the American Society for Steel Treating, or making a plant visitation to the Watertown Arsenal.

On Tuesday afternoon, the Machine Shop Practice division will conduct a session at which power transmission, x-ray inspection and gears will be the chief topics for discussion.

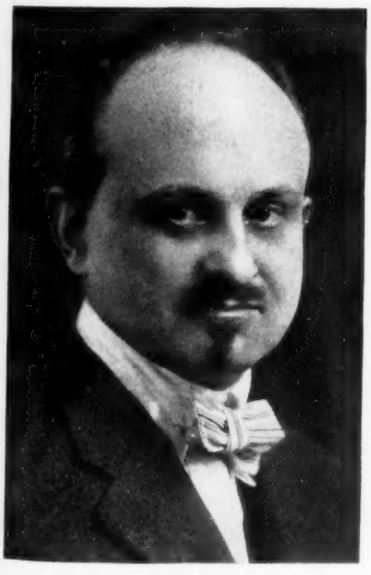
Participation in the congress this year is less extensive, for in Chicago in 1930 the two divisions conducted eight sessions running over a three-day period.

The program for the Mechanical Engineers has been announced as follows:

Tuesday, Sept. 22

MORNING

9:30 a.m.—Joint technical session on sheet steel with American Society for Steel Treating, Hotel Statler ballroom. Chairmen: J. H. Nead, Inland Steel Co., East Chicago, Ind., and H. J. Stagg, Halcomb Steel Co., Syracuse, N. Y.



W. Trinks

Chairman, Iron and Steel Division, American Society of Mechanical Engineers

F. C. Spencer

Chairman, Machine Shop Practice Division, American Society of Mechanical Engineers

"Evaluation of the 'Drawing' Quality of Extra Deep Drawing Sheets," by Thomas Dockray, Eastern Rolling Mill Co., Baltimore.

"Thin Strip Steel for Deep Drawing," by H. T. Morton and I. A. Rummler, Hoover Steel Ball Co., Ann Arbor, Mich.

"Some Effects of the Amount and Rate of Deformation on a Low-Carbon Strip Steel," by Joseph Winlock and A. E. Lavergne, Edward G. Budd Mfg. Co., Philadelphia.

"Comparison of Sheet and Strip Steels for Difficult Stampings," by E. S. Lawrence, Duraloy Co., Pittsburgh.

"Effect of Normalizing Upon the Grain Structure and Physical Properties of Automobile Sheet Steel," by W. F. McGarrity, Youngstown Sheet & Tube Co., Youngstown, O., and H. V. Anderson, Lehigh university, Bethlehem, Pa.

"Plastic Drawing of Sheet Steel Into Shapes," by E. V. Crane, E. W. Bliss Co., Brooklyn, N. Y.

"Lubricants Used in Deep Drawing of Sheet Steel," by Maurice Reswick, Pennsylvania Lubricating Co., Pittsburgh.

AFTERNOON

2:00 p.m.—Technical session of Machine Shop Practice Division, Hotel Statler. Chairman: F. C. Spencer, assistant superintendent of manufacturing development, Western Electric Co., Kearny, N. J., and chairman of the division.

"Power Transmission with Cast-Iron Pulleys and Paper Pulleys," by C. A. Norman and G. N. Moffatt, Ohio State university, Columbus, O.

"Positive Drive Equipment," by C. R. Weiss, Link-Belt Co., Indianapolis.

"Radiographic Inspection of Steel Castings and Welded Structures," by H. R. Isenberger, St. John X-Ray Service Corp., New York.

Moving pictures of research work on gears at Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and on German machine tool progress as exhibited at Leipzig Trade Fair.

Heat Treating Session for Automotive Engineers

BY ARRANGING a technical session on Wednesday morning, Sept. 23, the Society of Automotive Engineers will participate in this year's National Metal congress. This meeting, to be devoted to methods and costs of heat treating and alloyed cast irons, will be held in the Georgian room of Hotel Statler.

At the technical sessions of the other national organizations co-operating in the Metal congress will be presented a number of papers of more or less direct interest to the automotive industry.

The three papers to be presented at the session are as follows:

Wednesday, Sept. 23

9:30 a.m.—Technical session, Georgian room, Hotel Statler. Chairman: F. P. Gilligan, Henry Souther Engineering Corp., Hartford, Conn., and chairman of the iron and steel division of the Society of Automotive Engineers standards committee.

"Heat Treating Methods and Costs," by E. F. Davis, Warner Gear Co., Muncie, Ind.

"Recent Developments in Heat Treating Ball Bearing Races," by Dr. Haakon Styri, SKF Industries Inc., Philadelphia.

"Characteristics of Alloyed Cast Iron," by F. W. Shipley, Caterpillar Tractor Co.

F. P. Gilligan

Chairman, Iron and Steel Division, Standards Committee, Society of Automotive Engineers

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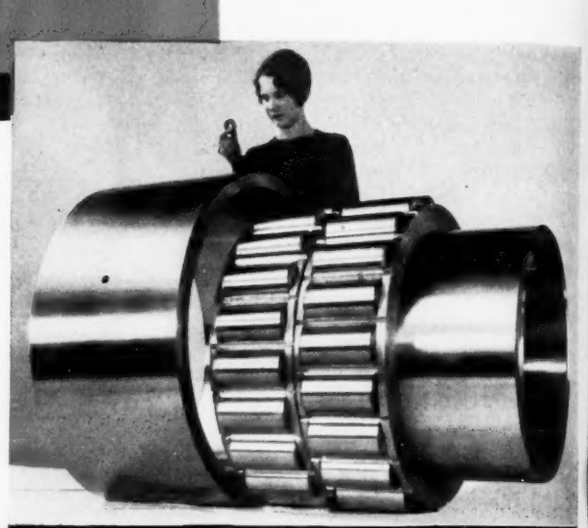

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Achorn Steel Co., Boston C-321
Air Reduction Sales Co., New York A-109, 111, 115, 117
Ajax Electrothermic Corp., Trenton, N. J. B-269
Allegheny Steel Co., Brackenridge, Pa. A-2, B-31
American Brass Co., Waterbury, Conn. C-131
American Car & Foundry Co., New York A-225
American Cyanamid Co., New York B-28
American Electric Furnace Co., Boston C-302, 304, X-11
American Gas Association ..... Gas Section
American Gas Furnace Co., Elizabeth, N. J. ..... Gas section
American Instrument Co., Washington A-16
American Manganese Steel Co., Chicago A-22
American Steel & Wire Co., Chicago B-119
Armstrong-Blum Mfg. Co., Chicago B-266
Armstrong Cork & Insulation Co., Lancaster, Pa. B-256
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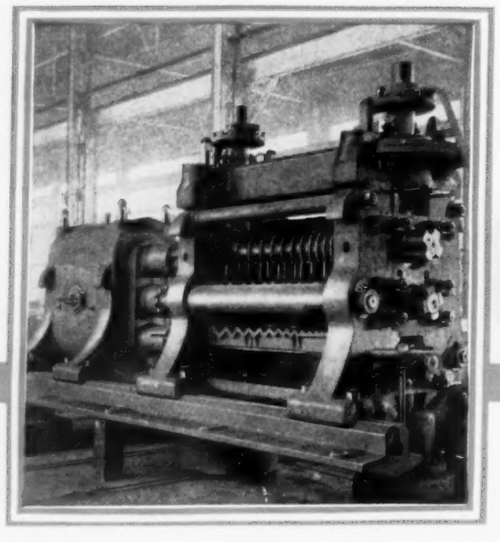

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New England

HARTFORD, CONN.—Silent Glow Oil Burner Co. has taken over three plant buildings and increased its floor space 25 per cent.

ATTLEBORO, MASS.—H. G. Balfour Co., 27 County street, has let contract to H. F. Lull, Main street, Pawtucket, R. I., and H. O. Maskingum & Co., 38 Emory street, Attleboro, for a 3-story plant and power unit. Estimated cost, $200,000.

EVERETT, MASS.—New England Fuel & Transportation Co., 250 Stuart street, Boston, has let contract to Koppers Construction Co., Koppers building, Pittsburgh, for a coke handling plant to be built on Beacham street here.

GARDNER, MASS.—State department of mental diseases, Boston, will erect a generating plant at the state hospital here at an approximate cost of $125,000. Albert B. Franklin Inc., 25 Haverhill street, Boston, is engineer. Equipment is to include stokers, generators, two turbines, and four boilers.

PLYMOUTH, MASS.—L. R. Barker has private plans for a pumping plant. Cost is estimated at $40,000.

New York

BROOKLYN—A. Staudt & Co. has been incorporated with $5000 capital by P. M. Jaffrey, Jamaica, N. Y., to operate a pattern shop.

BROOKLYN—B. & B. Bottle Co. has been incorporated with 200 common shares by C. M. Rechenberg, 26 Court street, to make bottle filling machinery.

BROOKLYN—Al Pom Metal Tile Corp. has been incorporated with $10,000 capital by J. H. McCormick, New Rochelle, N. Y.

BROOKLYN—M. J. Tatarsky, care of architect, Murray Klein, 65 Court street, proposes to build a metalworking and storage unit at 253 McKibbin street at a cost of approximately $150,000.

JAMAICA—General Builders Supply Co., 205 East Forty-second street, New York, has plans for a warehouse to be built at 177th street and Liberty avenue. Plans are private.

NEW YORK—Long Island Smelting Co. has been incorporated with $10,000 capital by I. A. Silverman, 401 Broadway.

NEW YORK—New York, New Haven & Hartford railroad, E. E. Oviatt chief engineer, New Haven, Conn., has let contract to the Austin Co., 120 Broadway, New York, for a warehouse to be built on 132nd street. Cost is estimated at $100,000.

New Jersey

ELIZABETH—Board of education, 417 South Broad street, proposes to build a 3-story industrial school. Cost is estimated at $150,000.

Pennsylvania

HANOVER—Hanover Machine Corp. has been incorporated with $30,000 capital by H. C., A. G. and Martin Moul, to manufacture and deal in machinery of all kinds.

LANCASTER — Bradford Refineries Inc., has been incorporated with $5000 capital by Frederick A. Reynolds, 2653 Eudora street, Denver, Colo., to manufacture and deal in machinery, including machinery for refining petroleum.

PHILADELPHIA — J. Gucker has leased a plant containing 5000 square feet of floor space at 311 North Tenth street, for the manufacture of electrical equipment.

PHILADELPHIA—U. S. Postal Meter Corp. of Pennsylvania has been incorporated with 500 no par shares by John Blakely, 509 Spring avenue, Elkins park, Philadelphia, and C. P. Middleton, 637 West Phil-Ellena street, to manufacture and deal in machinery, appliances and specialties.

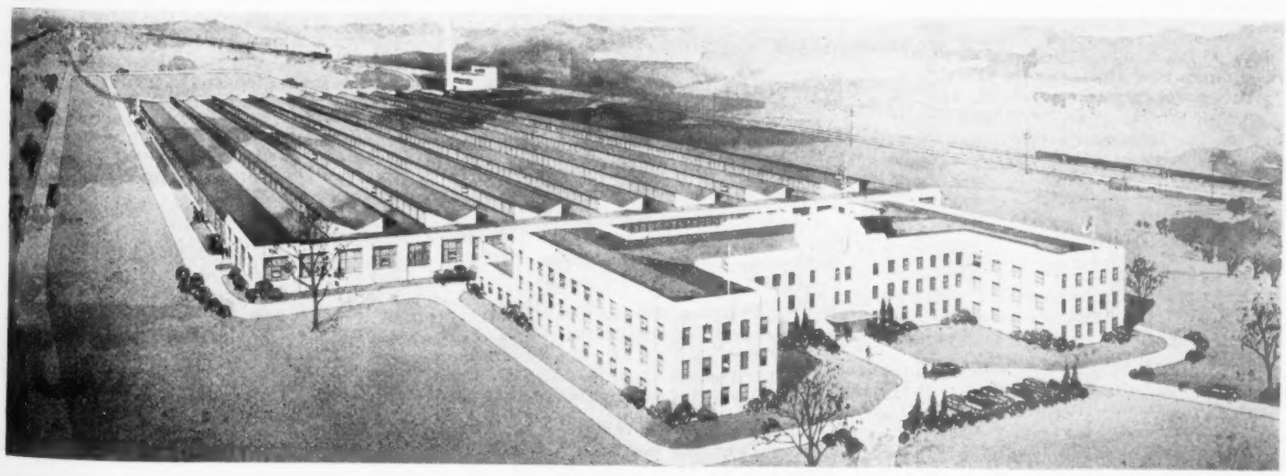
Ohio

AKRON — Plant of the Atlantic Foundry recently was damaged by fire. Loss, principally to patterns, is estimated at $10,000.

CLEVELAND — Brown Fence & Wire Co., F. M. Spitz president, 6532 Juniata avenue, has awarded contract for a 2-story addition, 66 x 118 feet. Christian, Schwarzenberg & Gaede Co., Union building, is architect and engineer. Cost is estimated at $40,000.

DAYTON — Constructing quartermaster, Patterson field, will receive bids soon for erection of two hangars, administration building and central heating plant. Total cost will approximate $300,000.

SPRINGFIELD—James Leffel & Co.,



Addressograph-Multigraph Corp., Cleveland, is erecting in Euclid, O., a Cleveland suburb, a new office and plant building involving a total investment of over $1,000,000. The structure will occupy seven acres of a site of 30 acres recently acquired. The manufacturing unit is to be 483 x 623 feet. The Addressograph-Multigraph Corp., manufacturer of a line of office machines, represents the merger of the Addressograph Co., Chicago, and the American Multigraph Co., Cleveland. Joseph C. Rogers is president

A. F. Sparks president, plan expansion of plant facilities, maturity indefinite. Company manufactures turbines, boilers and stokers.

Michigan

DETROIT—G. B. Wood, boiler division, Wood Hydraulic Hoist & Body Co., 415 Connecticut avenue, advises concerning expansion of facilities of Gar Wood Engineering Co. that the latter will operate as a division of the Hydraulic Hoist company, using part of the present plant at 409 Connecticut avenue, where production facilities will be more than trebled. (Noted Sept. 3.)

LANSING—Michigan Screw Co. has been incorporated with 1000 no par shares by H. B. Lundberg, C. R. Morris and Ray Potter, to manufacture and sell screws, nuts, bolts and machinery.

LEXINGTON—City council proposes to purchase a motor-driven pump for installation in the municipal water plant. Estimated cost, $28,000.

MIDLAND—Dow Chemical Co. will build a plant unit for quantity production of a magnesium alloy. Structure will contain 20,000 square feet and will be completed in about 90 days. Rolling mill has been ordered. Straightening mill, heat treating furnaces, 20-ton crane, and fabricating equipment also will be installed.

SAGINAW — Dual Balance Corp., 207 Eddy building, has been incorporated with 30,000 no par shares by James M. Sparling, 1024 Durand street, Frank Backus and Robert L. Bouchette, to manufacture and deal in dual balancers and other mechanical devices.

Illinois

PEKIN—Robinson Foundry is establishing operations here in a plant at Fourteenth and Ann Eliza streets, for the manufacture of brass and aluminum castings. Principal machinery has been acquired. C. E. Robinson is manager.

ROCK ISLAND—Col. G. R. Spalding, St. Louis, and Maj. Glenn Edgerton, U. S. engineers, Rock Island, are in charge of construction of a water project on the Mississippi river near here, to cost $2,000,000. Bids will be received about Nov. 1.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids Sept. 22 on schedule 6460 for eight corrugated suspension furnaces.

KEY WEST, FLA.—Bureau of supplies and accounts, navy department, Washington, will receive bids Sept. 15 on schedule 6427 for one 25-kilowatt diesel-driven generator.

BALTIMORE — Western Electric Co., Point Breeze, is reported to be in the market for machinery for the manufacture of insulated wire.

BALTIMORE—Aerogenius Co. Inc. has been incorporated by William L. Bond, 4709 Ready avenue, to rebuild airplanes.

ASHEVILLE, N. C.—Carolina Marble Quarries is investigating sites for plant expansion and erection of a finishing plant.

CHARLOTTE, N. C.—Charlotte Electric Repair Co. is in the market for a 75-horsepower electric motor.

GREENSBORO, N. C.—Glascock Stove & Mfg. Co. will install a sand blast outfit and an air compressor.

HAMPTON, VA.—Constructing quartermaster, Langley field, will receive bids Sept. 25 for construction of two air corps warehouses.

HAMPTON ROADS, VA.—Bureau of supplies and accounts, navy department, Washington, will receive bids Sept. 22 on schedule 6454 for one electric hoist, geared trolley type, and four electric hoists, plain trolley type. Former is to have capacity of 7½ tons and latter four capacity of five tons each.

MARTINSVILLE, VA. — Flashlight Corp. of Virginia proposes to build a plant for the manufacture of a batteryless flashlight on a 75-acre site near here. Principal machinery will be moved from Freeland, N. J. First structure will be 30 x 200 feet and will cost $30,000. C. B. Collins, Washington, D. C., is president.

PORTSMOUTH, VA. — Municipal council is considering a proposal to extend the municipal pumping plant and electrify equipment. Estimated cost, $50,000.

RICHMOND, VA.—Chesterfield Coal Co. Inc., H. R. Marshall president, Halifax, N. C., has plans for development of a coal mining project near here and will install handling equipment.

RICHMOND, VA.—Model Stoker Co. Inc., 316 East Main street, whose incorporation recently was noted, is inquiring for two drill presses, two lathes, arbor press and sheet metal machines. E. C. Graves is president. (Noted Sept. 3.)

Missouri

ST. LOUIS—Shampaine Aseptic Steel Furniture Co. has been incorporated by Abe Shampaine, 1151 South Broadway, to make steel furniture.

ST. LOUIS—Security Steel Products Co. has been incorporated with $40,000 capital by Michael J. Tracy, Midland avenue.

SULLIVAN—City council is considering a proposal to build a municipal light and power plant. W. A. Fuller Co., 2916 Shenandoah avenue, St. Louis, is engineer. Cost is estimated at $80,000.

WASHINGTON—Sta-Hot Water Heater Inc. has been incorporated by George H. Otto, to make water heaters.

Oklahoma

OKLAHOMA CITY—J. I. Case Co., Racine, Wis., recently noted as considering erection of a warehouse here, has let contract to Ellis, Nicholson & Cramer Inc., Security building, for a 40 x 100-foot unit. Repair department for rebuilding tractors will be included. (Noted May 7.)

TULSA—City, Earl Logan auditor, will build a maintenance unit for the municipal fire department, 65 x 337 feet, with facilities for repair of fire truck equipment.

TULSA—J. R. Cole Mfg. Co., Cole building, whose incorporation was noted recently, advises that it will not erect a plant or purchase machinery, at the present time, for the manufacture of a typists' copyholder, but will have manufacturing done under contract. (Noted August 27.)

Texas

CORPUS CHRISTI—Central Power & Light Co., Alamo National Bank building, San Antonio, Tex., has let contract to Wood Sherman Construction Co., Corpus Christi, for a 60 x 110-foot plant here. Approximate cost, $45,000.

GIDDINGS—City, J. S. Hillsman mayor, will award contract for a pumping station and sewage disposal plant. J. Rady, Waco, Tex., is engineer.

HOUSTON—Browning-Ferris Machinery Co., 205 Exposition avenue, Dallas, Tex., has plans for construction of a warehouse here, to include a shop for the repair of contractors' equipment.

PLAINVIEW — City council has plans for construction of a municipal power and light plant, to cost $100,000. Erection depends upon bond action.

PORT ARTHUR—Chamber of commerce and city officials propose to build a seaplane base at Sabine lake.

SAN ANGELO—Superior Tool Co. has been incorporated with $10,000 capital by R. E. Eppenauer, to make and sell oil field tools.

SAN ANTONIO—American Fertilizer & Chemical Works, San Saba, Tex., will install processing and handling machinery in a plant to be built here at 401 North Canal street. Plans are private. Cost is estimated at $75,000. T. F. Hawkins is president.

TEMPLE—Plant of the Armbruster Machine Shop, Fourteenth street, recently was damaged by fire. Loss is estimated at $8000.

Wisconsin

EAU CLAIRE—Eau Claire Radiator Mfg. Co., A. T. Applegren manager, is erecting a 1-story plant, 35 x 48 feet, at 615 South River street.

WILD ROSE — E. Colligan has awarded contract for erection of a machine and repair shop, 60 x 98 feet.

Minnesota

BYRON — Municipal council proposes erection of a waterworks plant. Druar & Milinowski, 904 Globe build-

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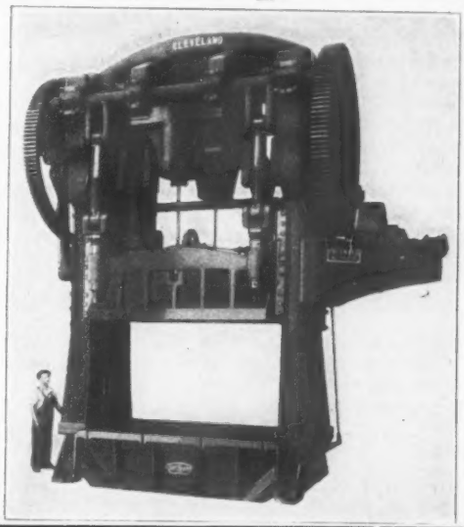
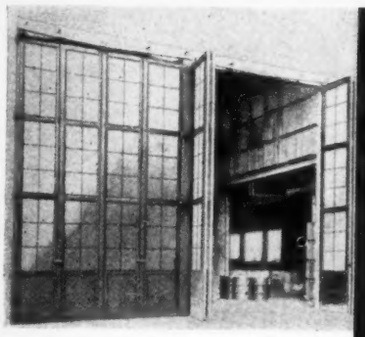
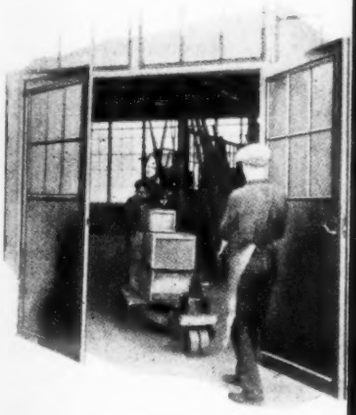


THE CLEVELAND PUNCH & SHEAR WORKS CO.
CLEVELAND OHIO, U.S.A.



Vertical Folding Doors



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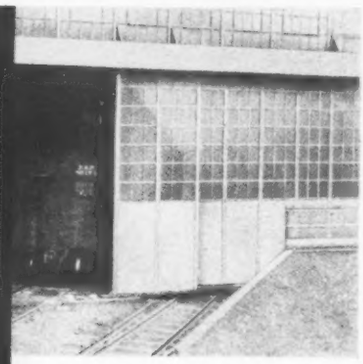
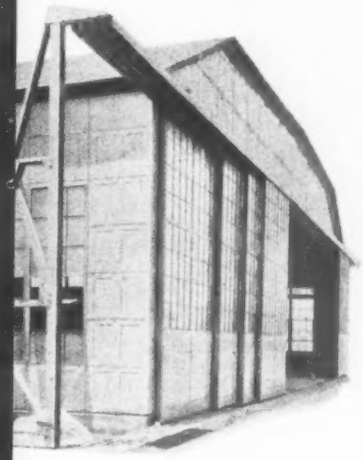


Industrial Steel Doors for large openings



Hangar Doors

ing, St. Paul, are architects. Estimated cost, $20,000.

KENYON—Municipal council will ask for bids soon for erection of a municipal light and power plant to cost $110,000. A. S. Kindreth is clerk.

MINNEAPOLIS—George F. Womrath, business superintendent, board of education, will receive bids Sept. 18 for construction of first unit of a vocational school, three stories, at Third avenue south and Eleventh streets. Approximate cost, $400,000.

OWATONNA—State department of administration and finance, H. W. Austin purchasing commissioner, 10 state capitol, St. Paul, will receive bids soon for construction of a steel water tank and for power plant equipment for installation here. Edwin F. Jones, 116 East Fourth street, St. Paul, is engineer.

ST. PAUL—American Can Co., 230 Park avenue, New York, proposes to build an addition to its branch plant here. Approximate cost, $300,000.

Iowa

BURLINGTON—Oscar Weinrich has awarded contract for construction of a 1-story plant, 50 x 70 feet, at 804 Osborn street, to be leased to Heinlin-Hine Mfg. Co., manufacturer of passenger and freight elevators.

LAKE MILLS—City council has awarded contract for construction of a municipal light and power plant to cost $90,000. J. D. Kent is clerk. Diesel units are to be installed.

Wyoming

SHERIDAN—State highway commission, Cheyenne, Wyo., has let contract for a shop unit, 42 x 124 feet, to be built here. Cost is estimated at $30,000.

Pacific Coast

ANAHEIM, CALIF.—Schofield Automotive Engineering Inc. is reported to plan erection of a 2-story plant. A. Curlett, Union Bank building, Los Angeles, is architect. Cost is estimated at $40,000.

LOS ANGELES—The Overland Terminal Warehouse Co. proposes to build warehouse at a cost of approximately $835,000.

MARE ISLAND, CALIF.—Bureau of yards and docks, navy department, Washington, has plans for a battery plant here, to cost $240,000.

MARE ISLAND, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids Sept. 22 on schedule 6453 for 100 forced draft blower fan wheels.

SAN FRANCISCO—Vermont Marble Co., 244 Brannan street, will build a marble finishing plant on Brannan street. L. P. Hobart, Crocker building, is architect. Cost is estimated at $40,000.

SAN FRANCISCO—State board of harbor commissioners, Ferry building, will build a 2-story storage and maintenance structure on Bryant street at a cost of approximately $200,000. Plans are being prepared. F. G. White, Ferry building, is architect.

Dominion of Canada

GALT, ONT.—George Hogarth, deputy minister of public works, Toronto, Ont., will receive bids Sept. 14 for construction of a power plant here.

OSHAWA, ONT.—Municipal council is considering construction of a sewage disposal plant to cost $650,000. F. B. Goedike is city engineer.

PORT STANLEY, ONT.—Municipal council proposes the erection of two pumping stations and other facilities. F. A. Dallyn, 71 Knight street west, Toronto, Ont., is engineer. Total cost will approximate $85,000.

ST. MARY'S, ONT.—Public utilities commission has plans for extension of the power plant and installation of new equipment. Expenditure of $25,000 has been authorized.

THESSALON, ONT.—City, J. O. Coulter clerk, will receive bids soon for construction of an addition to the hydroelectric plant. Cost is estimated at $22,000.

WELLAND, ONT.—American Manganese Steel Co., W. G. Nichols president, 333 North Michigan avenue, Chicago, recently noted as planning establishment of a Canadian plant, has secured the former Electro Metals plant here and will rebuild at a cost of $200,000. (Noted Aug. 6.)

MONTREAL, QUE.—Jenkins Bros. Ltd., 617 St. Remi street, is reported to plan expansions involving an eventual expenditure of $2,000,000. First structure under way is an iron and bronze foundry, 250 x 300 feet, to cost $500,000. Company manufactures valves.

New Trade Publications

WELDING DATA — Application sheet No. 22, Series 2, by the Lincoln Electric Co., Cleveland, is devoted to design of bases, with formulas, diagrams and full explanation of methods of computation.

MOTORS—A bulletin on repulsion start induction single phase motors has been issued by the Century Electric Co., 1806 Pine street, St. Louis. It describes and illustrates the motors and their details.

WAREHOUSE SUPPLIES—David H. Smith & Sons Inc., Fifty-first street, Brooklyn, N. Y., has issued a catalog of its steel, general hardware, machinery, tools, equipment and supplies. It is comprehensive and covers a wide range of articles.

STEEL — A booklet outlining plants and organization of the National Steel Corp., Pittsburgh, is being distributed by the National City Co., 55 Wall street, New York. The principal properties, which include the Weirton, Hanna, Great Lakes and Michigan Steel interests, are depicted, with full detail concerning the executives.

ACHIEVEMENTS—No. 2 of a series on engineering achievements by the Wellman Engineering Co., Cleveland, portrays the development of the stiff leg unloader for the ore trade and a railroad siding in two layers, both the product of the engineering ingenuity of this company.

NOVA SCOTIA—A booklet by the national development bureau of the department of the interior, Ottawa, Canada, is devoted to the resources and development of the province of Nova Scotia. It is designed to meet the requirements of the manufacturer, capitalist and homeseeker, giving facts of general interest and value.

PUG MILLS—William M. Bailey Co., Pittsburgh, in a current bulletin presents data for engineers and plant managers covering a paddle-type sintering plant pug mill designed to withstand the abrasive action encountered in pugging iron ore concentrates, flue dust and sinter fines. Illustrations show a 200 to 300-ton mill partially assembled and ready for operation.

BLOWERS AND GAS PUMPS—Four new bulletins covering standard and heavy duty blowers and gas pumps produced by Roots-Connersville-Wilbraham division, International - Stacey Corp., Connersville, Ind., have been issued to supersede all former bulletins on these products issued separately in the past by P. H. & F. M. Roots Co., Connersville Blower Co., both of Connersville, Ind., and the Wilbraham-Green Blower Co., Pottstown, Pa.

ELECTRICAL EQUIPMENT—Recent bulletins by the General Electric Co., Schenectady, N. Y., include the following: Explosion-proof, totally-enclosed, fan-cooled single-phase motors for hazardous locations; low-speed synchronous motors; mechanical-drive turbines; float switches; magnetic switch; low-pressure blast gates; time meters; plastic products. Booklets on arc welders and on arc welding are also available.